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Eye, Ear, Nose and Throat Affections

SOME OBSERVATIONS ON EYE INJURIES AND THEIR TREATMENT.

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Injuries of the eye under various circumstances are by no means infrequent among the working class of people. The character of these injuries is also multiform in variety. When an eye is destroyed a valuable member of our anatomical make-up has ceased to exist, and so valuable is it that the loss of the same affords an excellent ground for large damage suits against a corporation. Hence, to my mind, it is necessary that all general practitioners should have sufficient knowledge of the ordinary injuries of the eye to give the proper medical attention at the time of injury, and if the case be diagnosed as one of severity and they feel their inability to cope with the same, to send it or take it to the proper source for consultation. In the ordinary injuries I think that physicians, who are thoroughly practical and certainly endowed with some clinical experience, should be able to attend to such injuries almost as satisfactorily as the experienced oculist. The exception I make to this is, where the injuries go beyond the exterior portion of the globe and its adnexa, such as ruptures, perforations, and intra-ocular traumatism, and in such cases, for the benefit of the corporation which they serve, local surgeons should place all such cases under the care of a competent oculist, because in case a damage suit should arise it is to the corporation's interest that the most skilled attention should have been given to the plaintiff.

Frequently it is a matter of impossibility for an injured person to be moved to where the oculist resides, as, for instance, where there has been some other severe injury to the body in addition to that of the eye, and in such cases local surgeons should certainly have knowledge enough to give the proper attention until the patient is able to be removed.

With this preface I wish to speak upon the treatment of somme of the ordinary injuries to the eye.

1. Contusions and Lacerations.—The two lids, upper and lower, of the eye are protective, and the muscles which control their action while under voluntary control are also brought into action unconsciously or involutarily. This is indeed fortunate, otherwise the globe itself would often be irreparably injured had not the brunt of the force been exploded upon these appendages, as is seen in inflammation of the globe itself where there is paralysis of the sphincter muscle of the lids.

Hence, when there is an impending danger towards the eye the lids involuntarily close for the protection of the globe.

Cuts and contusions of the lids do not differ materially from those on other portions of the body, with the exception that the skin in this region is thinner, looser and, therefore, more liable to cellular infiltration. Swelling of the lid is due to this latter fact and "black eye" is but a practical example. Such conditions of swelling and ecchymosis are not harmful, but as a rule disappear within a few days and are hastened by a compression bandage. In ecchymosis of the lid, where a speedy disappearance of the discoloration is desired, I have found the painting of the lids three times daily with the following, a most excellent adjuvant: Equal parts of fluid extract of ergot and water.

If the blow upon the eye should cause great cellular infiltration, then an abscess sometimes forms which, when evacuated and a cool antiseptic dressing applied, disappears within 24 hours, without any bad results. In lacerations, cuts, etc., of various kinds about the lids, adhesive strips or small sutures can be used with success. If the cut should extend entirely through the lid, then deep sutures into the tarsal cartilage should be taken from without, so that such will not act as a foreign body on the inner surface.

Care should always be taken to see that the resulting cicatrix will not produce disfigurement, and this is especially liable towards the outer canthus, where the overlying soft structures are in such close contact with the long prominence of the orbit at that point.

In burns and scalds about the lids the chief danger, of course, is the simultaneous injury of the globe itself, and a remote danger in the resulting contractions which

follow, producing some form of tropion of the lids. The treatment here is the treatment of burns in other portions of the body, care being taken that whatever application is used it will not prove irritating should it get in between the lids. The following ointment has been used with the most satisfactory success:

Acetanilid .....grn. xx
Vaselin .....2 drams

2. The next injuries to which I will call attention are those of the eyeball proper.

First, and most frequent, come the entrance of foreign bodies. These latter consist mainly of pieces of cinder, hot or cold, particles of dust, iron or emery, especially with those working in the shops, and the various extraneous substances which sometimes enter the eye. Small foreign bodies lying upon the conjunctiva of the lids or even that of the globe are removed without difficulty and without the use of cocain. If beneath the upper lid the latter must be everted, and above all things do this little manipulation with delicacy and not with roughness which is entirely unnecessary. A simple method and one so very satisfactory in the removal of such foreign bodies, consists in tearing off a small strip of a newspaper border, rolling it up into a little cone, then allowing one end of it to be moistened in water. Touch now the foreign body with this moistened end; in every case you will find on its removal the foreign substance clinging to the paper.

If, on the other hand, the foreign body should imbed itself in the cornea, then the pain and discomfort is much more severe. If the substance be cold, as, for instance, a small particle of dust or cinder, its removal is simple and likewise the relief instantaneous.

If the particle be emery or hot steel which imbeds itself in the cornea, the pain is much more severe because of the injury done the superficial layers of the cornea. In the removal of bodies from this portion of the eye, it is always better to use a 2 per cent solution of cocain.

If the foreign body be hot when it enters the cornea, especially if it be a piece of emery, there is, besides the particle itself, an abrasion of the cornea and a deposit of rust at the point of contact. In such cases not only must the foreign body be removed by means of a spud, but the point of removal must be thoroughly scraped until every particle of rust is removed, for until this is done the patient will suffer just as if there had been no removal whatever. After the particle has been removed, especially if there be much abrasion of the cornea, I always find it best to irrigate the eye with a saturated solution of boracic acid, put in a drop of atropin solution, and close the eye with a bandage for 24 hours. This latter is not always necessary by any means, but in the end it may save the eye from severe corneal inflammation or ulcers at the point of removal. Foreign bodies striking the ball may not only imbed themselves in the exterior of the globe, but may even cause a rupture and a consequent penetration into the interior. Of course, such cases are far more severe, and it requires great judgment in the method of treatment even on the part of the experienced ophthalmologist.

Such ruptures may also be brought about in severe concussions around the region of the eye, blows upon the ball without the entrance of foreign bodies, as pieces of coal, rocks, flying timber, etc.

Wounds of the eye-ball will, of course, occur just where the globe is struck by the sharp substance, but where there is a rupture from concussion or pressure upon the ball by a heavy body the predilection for the rupture is at the sclero-corneal junction, since microscopical anatomy teaches us that it is here we find the thinnest portion of the walls of the globe. If, upon examining an injured person, we find the lids swollen, particles of dust and cinders around the region of the eye, and the lids tightly closed either from photophobia or pain and inability to voluntarily open them, the first thing is to clean off every particle of dirt by bathing the face and lids with warm, clean water and soap.

The lids are now gently opened to see if there is any dirt or foreign substance between them, and more especially to observe if there are any signs of the presence of a vitreous bead. If pain renders such an examination difficult drop in a couple of drops of a 2 per cent solution of cocain, which will enable you to obtain a better view. You now note whether there is any rupture of the globe, and if so, at what point. If in the cornea you are, of course, liable to prolapse of the iris and the consequent infection of the interior portion of the globe. If there is no rupture then clean the eye thoroughly with a 1-5000 bichlorid solution, drop in a little atropin and put on a compression bandage.

If there is rupture with no prolapse of the iris, do the same as the above, with the exception that if the rupture is in the periphery of the cornea it is best to use a solution of eserin. The two solutions I use are as follows:

1. Eserin .....grn. ½
Water 3jj

2. Atropin .....grn. i
Water 3jj

If, in addition, the iris is prolapsed, the prolapsed portion should be cut off and the above treatment applied. If there is no catarrhal secretion about the eye nothing further need be done than the dropping in of a couple of drops of a weak atropin solution three times daily, hot fomentations if there is much pain, and the keeping on of a compression bandage.

Let me give just one word of advice, and that is when you have any injury or inflammation involving the cornea never use cold, but always hot fomentations. The cornea has no blood vessels of its own, but derives its nutrition by imbition from the circum-corneal zone of vessels, hence, when you use cold applications you take away from the cornea those factors, viz: heat and moisture, which are so necessary for its proper nutrition. If the rupture has been made by a foreign substance which has also entered the eye, then the question of enucleation for fear of sympathetic ophthalmia will also arise. Or, if the wound is in the so-called dangerous region, that is, 3 or 4 mm. to the outer side of the sclero-corneal junction, then the same question may arise, and even with the experienced ophthalmologist the question of enucleation presents new features with every case. It is impossible here to discuss the question of enucleation, as to when it should be done or its indications, for these remarks must be confined to those conditions which must sometimes be treated by the general practitioner.

I will say, however, that in the large majority of injuries, such as ruptures of the eye and even those of the most severe type, enucleation is often unnecessary if thorough cleanliness and good judgment is exercised from the very start.

Let me illustrate this latter point by giving the his-

tory of a patient recently treated: Early on a Monday morning a physician telephoned me that on the day before a little girl, 15 years old, had been struck in the eye by a rock, accidentally, and that the cornea was ruptured clear across, making an ugly infiltrated wound with protrusion of the iris. He remarked that he was fully confident that an enucleation would have to be done and so informed the mother. When the child was brought to my office I found the conditions of affairs very much as my colleague had described. The other eye was also irritable. There was considerable pain and photophobia. The eye was thoroughly irrigated with a 1-5000 bichlorid solution. Cocain having been used, all portions of the protruding iris were snipped off, atropin dropped into the eye, and a compression bandage applied. A prescription for an atropin solution (2 gr. to ℥ ii) was given with instructions to drop it in the eye every two hours and between times to keep the compression bandage on thoroughly. No further treatment was used, with the exception of hot fomentations to relieve the pain. In one month the eye was perfectly healed, with no signs of irritation. No indications of sympathetic irritation in the other eye was observed and, with the exception that the pupil is occluded by inflammatory exudate, there are no signs of any future trouble. The lower portion of the cornea is clear, and later I expect to do an iridectomy, thus making an artificial pupil. In the same manner I wish to call attention to an article read by my friend, Dr. Lewis H. Taylor, of Wilkesbarre, Pa., before the American Medical Association, entitled "Conservative Treatment of Wounds of the Eye-ball," in which he narrates six cases of severe injuries where conservatism was used with the most gratifying results.

Next comes burn and scalds of the globe itself.

The two great dangers in this class of injuries are:

(1) Destruction of the cornea and consequent loss of sight.

(2) Formation of cicatricial tissue in the conjunctiva and the chance of adhesions between the ball and the lids.

Of course, large burns, such as we find from the entrance of caustics, as lime, into the eye, are by no means as frequent as small ones caused by particles of red hot cinders, etc. Sometimes, by escaping steam or water from a bursted boiler, the whole eye may be very seriously injured and the whole cornea become blanched throughout. We must remember in all such cases that the cornea obtains its nutrition, as has been said before, by imbibition, and hence one of the main successes in treatment is the supplying of the cornea artificially with heat and moisture to bring about this reconstructive process. Atropin and melted vaselin should be instilled locally. Warm compresses applied over the eye and frequent message of the lids be made to prevent any future adhesions.

Changes in the interior of the eye, the result of injuries, are, of course, only recognizable by means of the ophthalmoscope.

Severe concussion around the eye may occasion a dislocation of the lens through the rupture of the ligament of Zinn, intra-ocular hemorrhage, rupture of the choroid, etc., all of which would materially interfere with distinct vision. Hence it is that when no discoverable lesion can be found around the exterior of the eye, and dimness of vision is one of the symptoms, we must look, by means of the ophthalmoscope, into some unseen intra-ocular disturbance for a distinct cause.

Grand Opera House.

SOME SUGGESTIONS RELATING TO THE DIAGNOSIS AND TREATMENT OF COMMON ACUTE EYE DISEASES.

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Acute catarrhal conjunctivitis is commonly known as "pink eye." This condition seldom goes unrecognized either by the physician or the layman, but often through carelessness is allowed to spread from person to person. Fortunately, no trouble often results beyond the distress and inconvenience which the infection occasions those afflicted. In acute catarrhal conjunctivitis the infecting organism is usually either the Koch-Weeks bacillus or the pneumococcus. These two bacteria produce clinical appearances so nearly alike that microscopic examination of the conjunctival secretion is necessary to identify the etiological organism. Perhaps the chief importance in connection with acute conjunctivitis lies in the fact that genuinely serious eye affections such as corneal ulcer, acute iritis and acute glaucoma are often mistaken for this disease by general practitioners.

There are certain reliable diagnostic signs and symptoms in this connection which should be familiar to all physicians. In acute inflammation of the conjunctiva this membrane is red, and particularly that part away from the cornea. This *conjunctival redness* must be distinguished from the so-called circumcorneal redness which immediately surrounds the cornea in acute disease of the iris, ciliary body or cornea. In acute conjunctivitis there is always *mucoid* or *muco purulent secretion,* and usually this appears in abundance. Subjectively the patient complains more of smarting and burning than of pain.

Treatment.—This condition is self-limiting, but the course can be shortened materially by treatment. During the first few days of the disease *ice compresses* are valuable in allaying the inflammation, and in relieving the patient of the sensation of heat in the eyes. Instillations of *argyrol 25 per cent* every two hours are effective in combating the infection, and the excess of argyrol together with the secretion should be wiped away with absorbent cotton dipped in saturated *boric acid solution.* Before the patient goes to sleep the eyes should be annointed with vaseline or albolene to prevent the lids from sticking together. The prognosis is absolutely good.

Gonorrheal Conjunctivitis.—This is met with most often in infants born of mothers afflicted with gonorrheal vaginitis, and is usually recognized promptly by attending physicians through the characteristic and pitiful clinical picture presented by the new born within a few days of birth. But it should be borne in mind that gonorrheal infection of the conjunctiva may occur in persons of any age, and that the disease is even more serious in adults than in babies. Gonococcus infection and no other infection produces a profusion of thick, creamy, purulent conjunctival secretion. The diagnosis should be confirmed by microscopical examination of the pus, which reveals the characteristic intracellular diplococcus, negative to Gram's stain.

Treatment.—Vigorous treatment should be instituted as soon as the diagnosis has been made. Cleansing removal of the pus is most important. This is best accomplished by irrigations with a mild antiseptic solution such as boric acid (3 per cent). The pus should be removed from the skin and eyelashes by wiping gent-

ly with cotton moistened with the solution. The conjunctiva can be irrigated by allowing the boric acid solution to drip into the eye from soaked absorbent cotton or better by flooding the eye by the use of an eye dropper with a smooth tip. This cleansing process must be performed as often as free pus presents itself, every fifteen minutes, night and day, if necessary. Instill argyrol or protargol 25 per cent every two hours. If only one eye is infected this should be put in the healthy eye as well as in the diseased one for its prophylactic effect; or a watch crystal shield may be sealed over the good eye with adhesive plaster. If the eyelids stick together or if the skin of the lids becomes excoriated, warm vaseline should be applied. After the most acute stage of the disease, when the swelling of the lids has disappeared to a considerable extent, recovery can be hastened by applying 25 per cent argyrol or 1 per cent silver nitrate to the folds of the conjunctiva at the top of the upper cul de sac. The cotton swabs used in making the applications should be wound tightly on tooth picks or applicators, and the medication carried well up to the upper fornix and rubbed into the folds of conjunctival tissue.

Too much importance cannot be attached to the necessity of avoiding any injury to the cornea in the treatment of gonorrheal conjunctivitis, as a slight abrasion of the epithelium may result in an ulcer of the cornea and subsequent blindness. If an ulcer should complicate the conjunctival infection hot applications and atropin should be added to the treatment. After the flow of pus has ceased microscopical examination of smears from the conjunctival secretion should be made. Treatment must not be discontinued until repeated examinations fail to show gonococci under the microscope. During the course of the disease the transmission of the infection to others must be most scrupulously guarded against. If uncomplicated by ulceration of the cornea, gonorrheal conjunctivitis ought to be cured without impairment of vision. Corneal ulceration in the course of the disease always results in serious impairment or complete loss of sight.

Phlyctenular Conjunctivitis and **Keratitis.**—Phlyctenular inflammation of the conjunctiva and cornea presents the characteristic little nodules of lymphoid cells called phlyctenules. It occurs for the most part in children who are badly fed and are too little given to cleanliness and out of door exercise. This condition is sometimes referred to as "eczematous" or "scrofulous" and is usually accompanied by enlarged cervical glands, and eczematous fissures about the ears or nostrils. Photophobia, lachrymation and spasm of the eye lids generally are marked, and cause the child to present a pitiable appearance of distress. The phlyctenules may be in the conjunctiva or in the superficial layers of the cornea, but most often at the corneo-scleral junction. The nodules break down to form little ulcers, and if situated on the cornea give rise to considerable pain, which is often augmented by fissures of the skin at the outer angle of the eyelids.

Treatment.—A mild antiseptic ointment should be applied to the eyes and should be snuffed up the patient's nose two or three times a day. An ointment suitable for this condition is one made according to this formula:

℞ Hydrarg. Ox. Flav.....gr. i
Ol. Amygd. Dulc. .....gtt. x
Mix well.
Petrolat. Alb. .....ʒ iii
Misce.

Healing of the fissures in the skin is hastened by the application of silver nitrate 4 per cent. or the lunar caustic stick. The constitutional care of children afflicted with this disease is important. Cleanliness, fresh air and nourishing diet free from pastry and sweets are essential. Syrup of the iodid of iron and cod liver oil have been found to be beneficial and the results of a careful physical examination may suggest further helpful treatment.

Interstitial Keratitis.—This is an inflammation of the substance of the cornea; that is, an inflammation affecting neither the anterior nor the posterior surface, but the buried layers of the cornea. By the inflammatory process this normally clear structure is rendered opaque, and the acute symptoms of photophobia, lachrymation and intense blepharospasm appear. With very few exceptions, inherited syphilis is responsible for this disease, so that the diagnosis usually is rendered easy by the recognition in a young person of the inflammatory eye symptoms together with characteristic signs of inherited syphilis, such as Hutchinson's teeth, prominent frontal eminences, depression of the bridge of the nose and linear scars on the face near the angles of the mouth. The keratitis usually occurs in both eyes, but not necessarily simultaneously.

Treatment.—Smoked glasses relieve somewhat the sensitiveness to light. The pupil should be kept dilated with atropin sulphate ½ to 1 per cent. throughout the course of the disease unless the annoying symptoms of increased tension should set in. Hot compresses give some relief to the pain and have a favorable influence on the inflammatory process. Anointing the skin of the eyelids with vaseline prevents the hot bathing from parching the skin. Dionin in 2-10 per cent. solution is thought by some to be helpful after the acute symptoms have begun to subside. There is considerable difference of opinion among oculists as to the best constitutional therapeusis in interstitial keratitis. Salvarsan has been disappointing in its results. Mercury and potassium iodid are usually administered, and calomel in 1/10 to ¼ grain doses is the favorite form of mercury. The inflammatory process is self limiting and usually lasts from one to three months.

Acute Iritis.—It is not exaggeration to say that iritis often goes unrecognized by general practitioners of medicine. It is too often mistaken for conjunctivitis and without good reason, as the two conditions are usually easy to differentiate. In iritis there is increased flow of tears but no muco-purulent or purulent secretion, whereas in acute conjunctivitis there is always excess of muco-pus or pus, usually in such abundance that the eyelids are "glued together" in the morning when the patient awakes. This diagnostic point alone, if possessed by the physician, is sufficient to prevent him from falling into the common error of mistaking the serious condition of iritis for the comparatively innocuous condition of conjunctivitis. Acute iritis when treated for conjunctivitis may lead to serious impairment or loss of vision. Pain in the eye and head, usually worst in the early morning hours, tenderness of the eyeball, change in color of the iris, diminution in size of the pupil and circumcorneal redness accompany acute inflammation of the iris, and do not accompany acute inflammation of the conjunctiva.

Treatment.—Ascertain, if possible, the constitutional condition responsible for the iritis. Syphilis and "rheumatism" are most common causes. If either of these diagnoses can be established, the patient should be put on vigorous anti-syphilitic or anti-rheumatic treatment.

Inflammation of the iris does not contra-indicate salvarsan. Free purgation should be instituted whatever the cause of the iritis. Locally, atropin solution should be instilled in sufficient strength and sufficiently often to keep the pupil dilated. Application of compresses as hot as the patient can bear them relieve pain and help in allaying the inflammation. The pain may be severe enough to justify giving morphine or some other analgesic. A favorable course results in termination of the inflammatory process in two to four weeks.

Acute Glaucoma.—This is a most painful and serious disease of the eye occurring more often in women than in men. The pain is often more in the head above the eye than in the eye itself. It usually is intense, and accompanied by nausea and vomiting. Probably acute glaucoma has been diagnosed "headache and gastritis" many times. The increased intra-ocular tension renders the cornea steamy and shuts off the sight; the pupil becomes dilated and fails to contract when condensed light is thrown in the eye; the vessels about the cornea become engorged, giving a violet-red circumcorneal hue, and palpation reveals a hard eye, exceedingly sensitive to manipulation.

Treatment.—A hypodermic injection of morphin (*without atropin*) should be administered to relieve the pain. Eserine sulphate in 1 per cent. solution may be instilled every hour until the pupil contracts. Or, failing to accomplish this within a few hours, the physician should call an ophthalmic surgeon to perform an iridectomy at once.

80 West 40th street.

RELAXED EAR DRUM; ITS PREVENTION AND TREATMENT.

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I have stated in a former paper that the question of deafness has not received the attention that is due such an important subject. The deaf man suffers more than the blind man from his affliction for he is completely eliminated from the intellectual company of his fellowmen.

It has generally been supposed that the majority of cases of deafness arise from a catarrhal condition of the nose and throat, which gradually creeps up the eustachian tube and finally invades the middle ear, causing connective tissue changes, which are more or less irreparable. We have generally assumed that deafness was either "catarrhal or else due to an otoscherosis." In the latter class of cases either no treatment was attempted, or what treatment was given proved of little avail. In the former class of cases it had been the custom to attempt to inflate the middle ear, and in that way reactivate the parts.

The otologist is confronted with a harder proposition in the treatment of progressive deafness than any other specialist in the treatment of a chronic condition; for almost any other pathological condition can be studied under the microscope, and inference drawn by analogy. However, the middle ear can not be removed, and the parts adjacent to it which are the cause of disease processes, are in so close contact with important vital structures, and they deteriorate so quickly when removed from the body, that it is almost impossible to examine them pathologically with any accuracy.

I am perfectly willing to grant that the majority of cases of progressive deafness arise from the influence of the thickening of the parts with a stenosis of the eustachian tubes; but there is a very large class of cases, perhaps fifty per cent., in which the condition is aggravated either by the patient himself or by the physician who is treating him, because of undue pressure exerted on the ear drum with the consequent relaxation of the drum.

The presence of a relaxed ear drum in a large proportion of cases of progressive deafness is of sufficient importance to bring it to your attention. Its prevention is a very simple matter if one is willing to take the time to understand the cause of the condition, and is willing to use proper remedial agents. I have no doubt that the majority of these cases got their condition because of improper blowing of the nose, in other words, the improper use of the pocket-handkerchief; or by being taught the injurious practice of the Valsalva method of inflating the ears, or by having their ears inflated too forcibly by the attending physician either with the Politzer bag or through a eustachian catheter.

Before going further let us understand the mechanics of the condition. Many patients early in life often find that they are suffering from a stuffiness of the ears, or a slight ringing sensation in the ear. By this time probably there is some slight catarrhal change in the eustachian tube, which is probably partially stenosed. Patients find out often times that if they hold their noses while blowing into the handkerchief, some air will reach the middle ear, and that their symptoms will disappear. As the catarrhal process goes on, the tube becomes more and more thickened and blocked, until they find it necessary to use a great deal of force. What is the result? We have a narrowed tube and a comparatively large cavity into which the air is blown. When the tube closes after the inflation the air remains in the middle ear cavity until it is absorbed. Undue pressure is exerted on the ear drum with the consequent stretching of the small ligaments between the ossicules, and the loosening up of the ligament of the oval window. This is a mechanical result which is inevitable.

Sometimes the patient goes to a physician who advises the Valsalva method of inflation—that is pinching the nose tightly, blowing out the cheeks and swallowing. To my mind no more harmful procedure has ever been advocated in this class of patients, and I cannot too forcibly express my opinion before every one, that this method of inflation should never be attempted except in those classes of patients who have had an acute suppuration where the perforation still is present in the drum, and where one wishes to clean out the middle ear in this way. Many patients who are suffering from a beginning relaxation of the ear drums are usually more deaf, in fact, sometimes totally deaf after inflation with the eustachian catheter. One should not use the catheter in all cases by any means, and in those patients in whom he does use it he should be able to ascertain the exact condition of the patient's ears before he begins to blow in any air with too great force. There are at least three instances that have come to my particular attention, where deafness has followed the use of the eustachian catheter, which had been attached to a compressed air apparatus, and where too much pressure was put on the ear drum, sometimes as much as fifty pounds being used.

The preventive treatment, therefore, of relaxed ear drums consists in attention being paid to the catarrhal condition of the nose and throat which brings about a stenosis of the eustachian tubes; warning the patient against the improper blowing of the nose, or the im-

proper use of the handkerchief; and the proper use being made of all forms of apparatus for the massage of the middle ear.

The most important thing to be considered before beginning treatment is the proper differentiation of deafness due to a relaxed ear drum, and deafness due to the ordinary catarrhal process. Certain questions can be asked of the patient which will put us on the right track. Some of these questions are: "Do the ears continually feel full?" Does blowing relieve the pressure?" "Has it been harder as time went on to get the same result as far as the relief of the fullness is concerned?" "Is the hearing better in a noise than in a quiet room?"

In arriving at a proper diagnosis the nose and throat should first be examined to see whether there are any abnormalities which might continue to aggravate the catarrhal process. Often times when the nasopharynx is examined with the pharyngoscope adhesions are found in the fossa of Rosenmuller, which cause a continuous irritation to the eustachian tube. These must be broken down with the finger. The ears are then examined with an electric auroscope to which can be attached a massage apparatus, either an electric pump or a hand bulb. The excursions of the ear drum should be minutely noted. If the drum appears to be relaxed in part or in whole, we may consider that the deafness is due as much to this relaxation as to the catarrhal process, even though there may be some retraction of the drum itself.

The condition of the eustachian tube is then studied. In some cases when the Politzer bag is used no air enters the middle ear; in other cases the slightest pressure upon the bag can be heard very distinctly by the examiner when he connects his ear with that of the patient by means of a sounding tube. There are various gradations between these two extremes. In those cases where the tube is wide open nothing has to be done to the tube itself, but proper stimulation often may be necessary to the nasopharynx and to the region of the tube in order to improve the catarrhal process. The worst cases of deafness that I know of are those in which the tube is wide open, and in which the patient has a beginning atrophic rhinitis. When we find that the tube is stenosed it is necessary to try to dilate it by means of suitable bougies. If these are left in the tubes for an hour or so once or twice a week, the tube will gradually dilate and assume its proper size. Under no circumstances in these cases should one inflate the ears with the eustachian catheter except very gently to ascertain its patency.

These measures by themselves, of course, will not improve the patient's hearing. What is necessary is to bring about some gradual chronic inflammatory process, which will eventually tighten the drum, thereby, at the same time diminishing its concavity, draw on the ossicular chain and tighten the ligament of the oval window. Such an inflammatory process can be accomplished in the course of time if one has the patience to use the treatment, which I have found highly successful in twenty cases.

Applications are made daily for a period of four to six weeks of a solution of cantharides collodion, or of some dilution of a solution made up of one grain of cantharides and one grain of potassium hydroxid added to one ounce of water. This can be diluted into fifty per cent., twenty-five per cent., twelve and one-half per cent. and six and one-quarter per cent. solutions by taking one-half of the first solution and adding equal parts of glycerin, diluting the second solution in the same way, etc., etc. The first application to the ear drum is made with a cotton tipped applicator soaked in the pure cantharides collodion. In order to prevent the formation of a blister in the canal it is best to smear the canal with some ointment preferably a one per cent. yellow oxid of mercury. The strong solution is continued daily until the proper reaction appears—that is until one sees a serous discharge from the drum membrance. Weaker solutions are used then until this discharge stops, and then the stronger solution is continued until it occurs again. Of course one only learns from personal experience the proper solutions to use. As a rule one does not obtain the result he wishes until four to six weeks, during which time the patient's hearing is decidedly worse. The patient is then told to come back in about three months, when the treatment has to be repeated. Alternations of treatment and rest are kept up for one and a half to two years, or at least until one feels assured that the result is permanent.

As I said before I have treated during the past four years twenty cases in this way, in all of whom the hearing was improved, some to such an extent that it seemed almost miraculous. There have been several cases in which only one course of treatment has been given and where the patients have not returned for a second course, because they have felt that their hearing was so much improved that they needed nothing more. I do not feel that the result in these later cases is permanent, and I am sure that sooner or later they will have to return. In the case of one young woman last year, who had gone from one physician to another for three to four years. I was able to relieve the tinnitus in ten days. I examined her a short time ago and found that her hearing had improved from zero to eight inches in both ears by the watch, and she still has no tinnitus. In another instance, a stenographer, I have been able to improve her hearing sufficiently for her to continue her work without any trouble. In a third instance after one course of treatment I was able to bring the hearing up from zero to four inches. Many of the others have been lost track of, or are still undergoing treatment.

My object in bringing this subject before you is to emphasize the importance of the relaxed ear drum in bringing about a diminution in hearing or tatal deafness. I believe that the practitioner as well as the specialist should have a thorough knowledge of the mechanic of deafness, and be able to teach his patients preventive measures which will mean a great deal to them later in life. Deafness can be cured, or at least be made inactive in the early stages. When once the process has gone on to the stage where treatment such as I have outlined is necessary, not every patient is in a position to spare either the time or money to do what is necessary. We, as otologists, perhaps more than any others hear the heartrending cry of the deaf man or woman, who becomes an economic loss because of his or her affliction. We owe a certain duty towards these poor people, who perhaps might have made successes out of their lives if it had not been that some one doctor had neglected to let them know how important was the proper prophylaxis of the nose, throat, and ears. The attention to tonsils and adenoids in early childhood will probably do a great deal in the prevention of this distressing condition, and yet even this will mean nothing unless timely warnings are given of the importance of the indications that nature brings forth to warn us of our troubles. Fullness in the ears, tinnitus, frequent colds, discharge from the ears, constant mucus in the throat, all must have proper attention paid to them

11 West 81st Street.

POST-GRADUATE STUDIES IN VIENNA FOR THE PROSPECTIVE AURIST.

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In having this subject assigned, or rather suggested to me as part of a symposium on the eye, ear, nose and throat, I fear that I can hardly enter into a discussion of the matter without drawing comparisons between the facilities offered at home for the preparation of the otologist and those offered by the Vienna school. The spirit of the times is decidedly one of specialization, and how to best fit one's self for one's life work is of no little concern to the man earnestly entering the field of otology; he knows, or should know that more is demanded of him than a superficial knowledge of the tympanic cavity and mastoid, and that Poleritization or even catheterization is not a cure for all aural evils. The student has, to begin with, the knowledge of the subject gained in his undergraduate course, and this, generally speaking, is meagre in the extreme, owing partly to the fact that not sufficient time is devoted to the subject of otology, and partly to his own lack of interest in this special branch of medicine.

I believe that it is no longer looked upon as absolutely essential that a man must devote a number of years to general practice to fit him for the career of a specialist; what is more important is the general medical and surgical training such as that gained as an interne in the average hospital. With this as a foundation, the superstructure may be begun; but here, too, is required as groundwork, a working knowledge of the anatomy of this complex organ, an anatomical knowledge not such as is gained in the medical school and which is forgotten soon after the examination papers have been turned in, but one which will enable a man to feel perfectly at ease when working around the important structures comprising the organ of hearing and the important structures which are in intimate relation with it.

Such knowledge can only be gained by continued application and study, by sectioning and cross-sectioning of specimens, and by thoroughly familiarizing one's self with the many anomalous antomical formations to which this organ is subject. It is to be remembered that anatomy cannot be learned solely from text-books and atlases.

The embryo otologist on entering Vienna will not be long in locating the American Medical Association, a well organized society which has for its purpose, primarily, the regulation of the courses given by the professors, docents and assistants; that is, it decrees the number of men that may take a given course at one time; this, as can be seen, is of advantage to the student, as it prevents the classes from being overcrowded; it also regulates the prices to be charged for courses. A word here about the oft heard cry about the commercialism of medical Wien.

True, the knowledge is bought and paid for, and American dollars are as acceptable to the Austrian medico as they are to the less scientific Austrian tradesman; but it is to be considered that they give much in return; and what they give in return is knowledge that is gained from a wealth of clinical material, none of which goes to waste, a knowledge that is gained in the dead house, in the anatomical and pathological laboratories, and in the operating room; herein lies the secret of their success in otology; this wonderful combination of laboratory methods, clinic and surgery. Then why this cry about commercialism? Is not "the laborer worthy of his hire?" Many men contemplating a trip to medical Wien labor under the impression that letters of introduction to the various instructors will open the gates to their store of knowledge; visitors are shown every courtesy, but to expect to be given systematic instruction on the strength of a letter from a mutual friend is expecting too much.

The man just taking up his work in otology in Vienna will do well to get the groundwork first; and this applies also to the so-called advanced man, the man who has had more or less experience in the practice of otology; a little freshening up in his anatomy will be a good way to make a start. It is ridiculous to begin work with a course on surgical complications of the ear or functional testing of the labyrinth only to find that much of what is being talked about is going to waste as a result of lack of knowledge of the underlying principles.

Diagnostic courses may go hand in hand with anatomical courses and it will soon be seen that the former will be much more appreciated when the anatomy has been mastered. This applies also to the men doing nose and throat work, and generally these three subjects are taken together. In the clinical and diagnostic courses much stress is laid on the otoscopic findings, and accurate drawings are made of the drum lesions and tagged to the patient; in these courses also, many minor aural operations are performed, and conservative therapeutic measures are dwelt upon. Generally several such diagnostic courses are given by different men, and since the cases used for demonstration are all different, one profits from all of them.

Hours between courses may be profitably spent in the clinic or operating room. In the Allegemeines Krankenhaus and in the Poliklinic close by, where operations are being performed in large numbers, one comes within close range of the field of operation, and generally all the steps and all findings are demonstrated. The student who remains in Vienna for any length of time and stands in the good graces of the professor or assistant, is often called upon to assist at the operation.

Of operative material there is a great wealth, and there are times when in the course of a single day's work one may see operations ranging from a simple mastoid to the labyrinth operation, and operations for extensive intra-cranial complications. In labyrinthine work the Viennese school especially excels. The Urbantschitsch clinic (formerly Politzer's) can boast of many ardent workers, such as Barany, who has given us the caloric test, the pointing test for the differential diagnosis between labyrinthine and retro-labyrinthine lesions, and the symptom-complex that goes by his name. The labyrinth operation has been worked out to a nicety here as can be testified by the results of 109 cases reported by Ruttin (Ruttin Klinik der serosen und eitrigen labyrinth-Entzundungen 1912).

As to the indications for the labyrinth operation, marked differences of opinion exist between the operators in the Urbantschitsch clinic and those in the Poliklinik headed by Prof. Gustav Alexander. The latter performs the labyrinth operation only when there is complete destruction of the function of the labyrinth together with evidence pointing to an intra-cranial complication. In the Urbantschitsch clinic the operation is performed in cases of diffuse purulent labyrinthitis where the cochlea function and static labyrinth are entirely destroyed, without waiting for development of endocranial complications. Ruttin points with just pride to the series of cases of diffuse suppurative labyrinthitis

operated upon before complications had set in, in which recovery took place. In those cases where the operation was performed after the onset of brain symptoms, the results are by no means as good. On the other hand, Alexander reasons that spontaneous recovery from diffuse suppurative labyrinthitis may take place, the microorganisms losing their virulence, and organization resulting from connective tissue and new bone formation; that meningitis and death need not necessarily follow because many of the cases in our deaf and dumb asylums have probably gone through just such a process, and no labyrinthine operation was carried out.

Whiting (*N. Y. State Jour. of Med.*, Nov., 1913), leans towards the view of early operation upon the labyrinth in cases of acute diffuse suppurative labyrinthitis coming on in the course of a chronic middle ear suppuration with attacks of nausea, vomiting, vertigo, complete deafness and rotatory nystagmus to the healthy side; if, in such a case, the static labyrinth no longer responds to the normal physiological stimuli, and the Weber is referred to the good ear, this author does not wait for the appearance of meningeal symptoms, but operates at once.

To determine definitely upon the indications for opening the labyrinth where this organ is the seat of a suppurative process requires experience that is gained by the study of a great many clinical cases, and where possible, by the study of the anatomo-pathologic changes which take place in diseases of the labyrinth. Few men have had the good fortune to enjoy a large personal experience with these cases, and even these cannot fail to see the importance of analyzing the cases of other men with the hope of formulating more definitely the indications for the labyrinth operation.

Leidler (*Arch. f. Ohrenheilkunde*, Dec. 1913), from an analysis of his own series of cases, and those of such investigators as Politzer, Alexander, Neumann, Ruttin, Uffenorde and Hinsberg, has come to the following conclusions:

1. "Every labyrinthine affection coming on in the course of a suppurative otitis media (be this acute or chronic) which is combined with labyrinthine intra-cranial complication, should be operated upon at once, whether this intra-cranial complication be one of mild degree or pronounced.

2. "Every labyrinth becoming affected on the base of an acute or chronic otitis media, with symptoms of acute diffuse labyrinthitis, that is, deafness, nystagmus of third degree to the healthy side and loss of reaction to the caloric and turning test, should be operated upon if the temperature is above 38 degrees C, or if these symptoms remain for four days without abating.

3. "A labyrinth whose function is completely destroyed from an acute or chronic otitis, but which does not fulfill the conditions pointed out in the above paragraphs, should not be opened, but instead, an antrotomy or radical operation (Schwartze stacke) should be performed. The latter two are the operations of choice, (a) in cases where a pathological opening is found in the labyrinthine capsule leading into the peri or endolymphatic spaces (fistula, cholesteotoma, sequestra, tumor, etc.), or, (b) in cases of continued irritation of of the static labyrinth with symptoms of dizziness, nystagmus and vomiting."

This only to illustrate the diversities of opinion on this all-important problem.

From the opinions expressed by the above authorities, one may see that the question of opening the labyrinth is still a mooted one, though we are nearing the solution of it.

Other courses which may be taken with advantage by the student of otology visiting Vienna are:

Functional Testing.—Much stress is laid on this branch of otology and a number of excellent courses can be taken both in the Urbantschitsch clinic and in Prof. Alexander's clinic. Tuning fork tests are carefully made upon all cases taken up for demonstration, after the hearing for conversation and whispered voice has been ascertained. In addition to the cardinal tests for lateralization and for determining the lengthening or shortening of bone conduction, the Gelle' test is made in cases which are at all suspicious of otosclerosis to determine the state of the stapes in the oval window. Alexander is very partial to the Stenger test which is used to determine complete unilateral deafness and he rarely resorts to the use of the noise apparatus. Tests with the complete range of Edelman-Bezold forks are rarely performed, and then only to demonstrate the existence of tone islands. In this connection it is to be hoped that some day the subject of acoustics may be taken up as it would undoubtedly prove to be of the same value to the aurist as the subject of optics is to the ophthalmologist.

The static labyrinth is made the subject of detailed study; the courses comprise a theoretical and practical consideration of this organ; the anatomy of the bony and membranous canals and the labyrinthe capsule is given in review and the physiology is gone into in detail. The tests to determine the function of this organ are made upon normal and pathological cases; the latter are numerous, and ample opportunity is given for the study of the tuning fork tests, the caloric, the fistula and the galvanic tests. Many cases are referred from the neurological and internal medicine departments for examination, with the result that interesting cases of brain tumor are frequently seen; also inner ear diseases associated with general nervous disorders.

Surgical Complications of the Ear.—The courses in this branch of otology are particularly valuable; the patient is wheeled from the ward into the class room when possible, or the case is studied at the bedside. The history is carefully gone into, the functional tests are applied, the otoscopic examination is made, and all necessary laboratory data are furnished.

Many of these cases are seen on the operating table, and it is here seen how remarkably close the examiners come to making correct diagnoses even in the most complicated cases. The progress of the case is then watched unless it comes to autopsy, and even then begins a fresh study of the findings until the final mounting of the specimen on the microscopic slide.

Pathological Anatomy.—Professor Alexander gives an excellent course in his laboratory which contains a fine collection of pathological specimens of temporal bones, illustrating malformations, new growths, tuberculosis, syphilis and some of the rarer anamolies.

Histo-Pathology.—Two such courses are given, the Neumann-Ruttin and the Alexander, each lasting about three months. In the former about 150 sections are mounted and studied and the specimens include many sections of the nose, throat and larynx. Prof. Alexander furnishes many instructive specimens from his large collection; his sections from cases of otosclerosis, congenital deafness and the various forms of labyrinthitis are particularly valuable.

Operations on the Cadaver.—The following operations are performed under the guidance of Dr. Ruttin or Dr. Neumann,—the simple mastoid operation, the radical, the sinus and bulb, exposure of the middle and

posterior fossa, the operation for temporo-sphenoidal and cerebellar abscess, and the labyrinth operation of Neumann. This course is well worth repeating, as one cannot do too much operative work on the cadaver. It is also well that a certain amount of this work be indulged in aside from the regular courses given by the instructors; those in charge of the dead house material are ever ready to furnish a head for this purpose (for a remuneration).

Conclusions.—Excellent opportunities for work are offered to the man who is willing to work. The instruction is systematic and thorough; those who give their time to teaching are thoroughly trained and know the wants of the student. There is much in getting a proper start, and to the student who applies himself to the study of anatomy and pathology a wide field is open. The special advantages over our system of post-graduate instruction are (1) a better concentration of the clinical material, most of it being divided between the Allgemeines Krankenhaus and the Poliklinic a stone's throw away. (2) Better facilities for anatomical and pathological studies. (3) The clinic patient is much more docile than our home product, and submits more readily to demonstration purposes. (4) In Vienna the amount of time devoted to the teaching of otology far exceeds the amount of time devoted to private practice; unfortunately the converse holds true in America.

To be sure, we have good teachers in America, but owing to the large demands upon their time both in private and in hospietl practice (teaching being poorly paid), our best informed otologists find little time to teach.

62 West 96th St.

SUBMUCOUS RESECTION OF SEPTUM WITHOUT PACKING.

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The most frequent intranasal operation to-day is probably the submucous resection of the septum. The operation itself rarely gives discomfort, but the after-treatment to prevent hemorrhage and haematoma is frequently extremely uncomfortable. Within three or four hours the shrinking effects of the cocaine and adrenalin have passed and with the reaction that sets in, the erectised tissue is distended to its limit. The presence of the gauze or other material used for packing acts as an irritant and causes a hypersecretion, saturating the packing. The gauze swells and forms a solid mass. The result is an intranasal pressure that produces intensely disagreeable symptoms. The frontal pain is frequently too severe to permit sleep and continues till the packing is removed. The serous secretion discharges anteriorly and posteriorly and necessitates almost constant attention. If the nasal cavities are loosely packed, more or less severe hemorrhage result, due to the intense injection of the tissue in the effort to secrete sufficient fluid to wash out the foreign body —namely, the packing. The conjunctiva is injected and the lachrymal glands add to the general discomfort. A sensation of suffocation results from the completely blocked nasal passages. When the patient presents himself for unpacking few more miserable looking objects come under our observation.

The majority of these operations are performed in the physicians' offices or in the out-door departments of the hospitals, and the patient goes home where he is under anything but skilled or intelligent care. There he usually remains in his discomfort for twelve hours to four days. Sleep is practically impossible, food is tasteless or worse and no relief can be offered him till the arrival of the time to remove the packing.

The effect of the more or less prolonged irritation on the mucous membrane of the nose is very evident a few hours after the removal of the dressing or packing. The membrane is intensely red and greatly swollen and the hypersecretion continues for several days. A thick tenacious pseudo membrane may cover the membrane on one or both sides of the field of operation. The reaction is so great that frequently a week or ten days elapse before anything approaching the normal exists. With the removal of the dressing, hemorrhage is often started and a haematoma results, a condition the packing is intended to prevent. This blood clot usually becomes infected and a septic condition ensues that greatly delays recovery.

The operation is perfectly painless, but the post-operative experience is so distressing and often so prolonged that patients can with difficulty be persuaded to submit to further operative procedures. To get away from this result, all kinds of material have been used. Some have been filled with heavy oils and absorbent powders but the results have not been very different.

If patients can be placed in bed directly after operation, intra-nasal packing can frequently be dispensed with, but the problem has been to find a post-operative treatment that would enable the patient to return home at once without fear of hemorrhage or the formation of hematoma. The best procedure suggested up to the present time is the one devised by Dr. O. A. Lathrop, of Boston, which consists of a chain stitch mattress suture of catgut. The suture is carried through both layers of mucous membrane high up posteriorily and anteriorily, the next lower down and repeated till the floor of the nares is reached. These hold the mucous membranes in contact so that very little post-operative hemorrhage occurs and practically never a hematoma. In the twenty-five submucous resections performed by the author in the past four months, no intra-nasal dressing was used and all the patients returned to their homes. The results were as follows:

Hemorrhage was not sufficient to necessitate the operators or any medical assistance. There was practically no post-operative distress such as frontal pain, injected conjunctiva, excessive hypersecretion or a distressing sense of suffocation. Sleep was interfered with in but a few instances. The reaction in the mucous membrane was so slight that the intranasal condition was better on the third day than usually existed on the tenth day after the packing method. In no instance did a pseudo membrane form. The shock and depression following the operation was far less. Free nasal respiration through one or both sides began within thirty-six hours in 80 per cent. of the cases. Hematoma did not occur in a single instance. In two cases a pinhole perforation resulted about an inch from the vestibule midway between floor and roof. The interference with circulation seems to be greatest in this area, and the greater tendency to crust-formation here, tends to keep a perforation patent that would close up further back. This led to a change in the location of the sutures as the hemorrhage is usually from the periphery of the area from which the cartilage and bone have been removed. A chain of sutures was placed along the floor of the nose beginning anteriorly, then vertically, posteriorly and then anteriorly along roof and parallel with nasal bridge to the starting point. From there three or four zigzag sutures covered the area enclosed in the original chain. These were placed

more posteriorly than where the perforations had occurred in the two cases referred to. So far the results have been satisfactory.

In conclusion: Suturing the mucous membranes together saves the patient from distressing symptoms that are coincident with a packed nasal cavity, controls hemorrhage, shortens the time of recovery and possibly gives a thinner septum than would result after the intense inflammatory reaction caused by any foreign material.

307 Cumberland street.

TONSILLAR TREATMENT.

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It may be of interest to general practitioners to have a summary of thirty-seven years of experience in treating the more common affections of the throat. The object is to set down the simplest and most effective methods that time and clinical practice have approved.

Acute Tonsillitis.

The simplest form, due to infection or a cold, is easily subdued in the following manner: spray the throat, while the tongue is depressed and the breath held for a moment, with the Dobell-Pynchon anti-septic solution, which is made after the following formula:

℞ Pulveris sodii biboratis (C. P.)
Pulveris sodii bicarbonatis (C. P.)....āā gr. xxx
Thymolinis 3ii
Glycerini 3vi
Aquæ .....q. s. ad Oi
Misce.

Then apply a 3 per cent. solution of silver nitrate by means of a curved cotton holder. Follow this with a spray of a 3 per cent. solution of camphor-menthol. The cotton carrier is best made of aluminum, with a rather attenuated point so as to penetrate the crypts. The rest of the carrier should be firm enough to prevent bending as it is pressed into the depressions. There is an advantage, also, in that the silver solution does not attack aluminum as it does other metals. When spraying the tonsils with an atomizer having a curved tip directed toward the crypts, sufficient air pressure, about 15 pounds, should be employed to drive the spray well into the lacunae so as to evacuate them of all retained secretions, perhaps concretions, for these may have become decomposed and irritating and may be infested with bacteria, which are responsible for the inflammation.

Some practitioners make the mistake of directing the patient to sound the syllable, ah, while spraying the throat. This should not be done, for, while vocalizing, the expired column of air tends to eject the spray from the patient's throat and into the physician's face and over his clothing. While practicing this method in cases of diphtheria, many doctors have become infected and have paid the penalty with their lives. Although there are many other remedies, such as zinc chlorid, that are effective, this simple treatment has proven so satisfactory that it does not seem worth while to multiply them. The fewer the medicaments the better, if they are the best. In throat diseases, as well as elsewhere, emphasis must be laid on the importance of proper diet, fresh air, exercise and effective elimination.

Rheumatic Tonsillitis.

In this form of tonsillitis, other than tonsillar tissue is likely to be involved. Both the mucous surfaces and the muscular supply of the larynx are often affected, and even the cervical muscles at the sides of the neck, the sternocleidomastoid, etc. It is evident, then, that both constitutional and topical treatment will be required. The detergent solutions which are used in simple tonsillitis are applicable here, since cleanliness and disinfection are always in order. After these, guaiacol has rendered excellent service and has seemed to shorten attacks. The pure drug applied to the tonsil on a cotton carrier may prove to be painful, in which event it should be diluted with equal parts of glycerine.

Constitutional treatment should be instituted at once, with such remedies as sodium salicylate, salol and antipyrin. The latter remedy is useful in doses of five or ten grains every three or four hours, particularly in relieving pain. The salicylate and salol in 10-grain doses have proven to be efficacious in preventing the formation of abscesess. As this is a very painful affection, it is especially fortunate that we have in these well-known remedies a reliable means to abort the attacks when patients are seen early in the onset of the disease. Moreover, we have it in our power to anticipate future suffering by pursuing a prophylactic course of these remedies, alternating with lithia if the salicylate and salol produce their characteristic physiological action on the ears. This is evidenced by impaired hearing and subjective noises.

Ulcerative Tonsillitis.

Reference is had here, not to tubercular or syphilitic ulceration, but to the simple form which is commonly seen in general practice. While the malady is often a painful one, both physician and patient are sometimes surprised to find the tonsils covered with an ulcerating surface when no such condition has been suspected. I have sometimes found such ulceration in children when making the routine examination of the nose and throat in ear cases, and found the tonsils to be a mass of ulcers, although no complaint with reference to the throat had been made. The importance of this condition is apparent when we consider the close causative relationship of inflammatory action in the throat to diseases of the ear. Hence, the importance of early treatment.

The same cleansing solutions which have been previously mentioned, are appropriate here. After a thorough washing of the surfaces and crypts of the gland, a 10 per cent solution of silver nitrate should be applied all over the ulcerated surfaces and carried down into the crypts, as well. Following this, aristol should be dusted with the powder blower over the gland and thrown into the diseased lacunae. Ulcerative tonsillitis occasionally follows cauterization of the turbinated bodies. For this reason, the nasal cavities should be examined for any diseased foci, and treated if any are found. Here is illustrated the intimate pathological relation of the nose and throat.

There are instances in which the tonsils are diseased and are the seat of recurring inflammation, but in which patients object to an operation for their removal. I have succeeded in rendering such glands inocuous by means of the electric cautery employed as follows: Selecting three or four crypts at a time, a 10 per cent solution of cocain is applied to the interior of each crypt, not by spraying, but by means of a fine pointed cotton applicator, taking great pains to prevent any of the solution from escaping into other parts of the throat. After the crypts are sufficiently anaesthetized, a suitably curved electrode is introduced into each crypt and the electric current is turned on, using a sufficient current to produce a white heat before the electrode is applied. In this manner each crypt is thoroughly cau-

terized, and the patients so treated have enjoyed freedom from subsequent attacks.

A warning should be given here against the use of much cocain in the throat, particularly against spraying it into the pharynx. A deplorable accident happened to one of my former assistants: He had applied cocain to the throat preparatory to operating, but before he began the operation the patient fell backward in the chair, gasped and died.

There are conditions of the tonsils which the foregoing methods of treatment are inadequate to correct. Such are greatly hypertrophied glands and those which may not be very much enlarged, but which are diseased and have become a menace to the organ of hearing and to the general health.

Enlarged and Degenerate Tonsils.

When and how should offending tonsils be removed? They should be removed (1) when they are sufficiently enlarged to obstruct free respiration; (2) when they embarrass or muffle the voice; (3) when they give rise to a distressing sense of a foreign body in the throat and frequent swallowing in efforts to relieve it; (4) when they are the seat of recurring inflammation, which endangers the integrity of the ears, nutrition and the evolution of the jaw during the period of second dentition; (5) when they are associated with enlarged glands in the neck; (6) when there is reason to believe that they are an etiological factor in attacks of rheumatism; (7) in cases that are subject to repeated attacks of peri-tonsillar abscess; and (8) when they are associated with adenoid growths in the vault of the pharynx. These are positive indications for an operation, and in these conditions patients will be benefited, both locally and generally, by removal of the trouble-producing glands.

When tonsils are not enlarged to the extent of producing symptoms of their hypertrophy, and when they are not the seat of a diseased process, there is no good reason for operating. I speak thus dogmatically because I know that there are physicians who make it a practice to operate upon every enlarged tonsil, patron permitting, whether the gland has given rise to any symptom or not. This is like slicing off the end of every nose that is longer or larger than the average. Nature placed these organs in the throat, and I have seen thousands of them which presented no history of ever having given any offense. We do not yet know the precise relation that they bear to the system of ductless glands, or the relation of their internal secretion to the blood cells. The normal tonsil, also, is undoubtedly concerned in the production of the voice, by improving its resonance and assisting in giving direction to the column of air while keeping the pillars of the palate separated from each other.

While hypertrophied and degenerate tonsils may impede the movements of the system of muscles of the throat that are concerned in phonation, the healthy tonsils are an aid to normal voice production. By removing those that are so large as to interfere with perfect vocalization, the voice is improved. On the other hand, the removal of glands that are not pathological, or the performance of a too radical operation, may impair voice production.

For an example of the former condition: an actress well known in America and England was compelled to relinquish her work on the stage because of voice deterioration. Examination revealed degenerate tonsils and chronic laryngitis. Believing that the diseased tonsillar condition stood in a causative relation to the laryngitis I operated upon the tonsils. Treatment of the larynx soon reduced the inflammation, her voice was restored and she returned to the stage. This was several years ago, and she is still in the work. The cause being removed and the vocal organ being placed in a healthy state, it remained healthy.

Contrarywise, instances of injury to the voice have been reported as resulting from tonsillar operations, although I have never met a patient in whom tonsillotomy caused voice impairment.

Tonsillotomy versus Tonsillectomy.

The choice of operation lies between tonsillotomy and tonsillectomy. By the former is meant excision of the tonsil, by the latter, complete enucleation of the whole gland.

By the use of the tonsillotome to guillotine the tonsil, a sufficiently thorough operation is had to remove all of the tonsil except a small cushion of tissue next to the underlying aponeurosis. But, in order to obtain this result, the operation must be performed differently from the method of many physicians. I have frequently found in patients brought to me for operation that the apex of the tonsil only had been merely clipped, leaving nearly all of the gland behind. Such a method is futile, since it does not accomplish the purpose of the operation.

In order to obtain satisfactory results, a reliable assistant should press inward very firmly over the base of the gland when the ring of the tonsillotome is forced down about it close to the aponeurosis. Then the knife will remove most of the body of the tonsil. If the pillars of the palate are adherent to the gland they should be freed so that the fenestra of the tonsillotome may embrace it near its base, without injury to the pillars.

A strong instrument (Fig. 1) is needed, so constructed, with the handle placed at a convenient angle to the shaft, as to give a powerful purchase. Then, with firm counter-pressure over the base of the tonsil, the largest part of it is excised. The remaining section of tonsillar tissue leaves a flat wall instead of a deeply concave surface, such as we find after enucleation. This is enough to keep the pillars apart so that proper direction is given to the column of expired air in voice production.

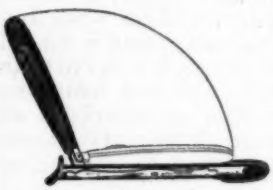

Fig. 1.
S. S. Bishop's Tonsillotome.

With this tonsillotome it is impossible to penetrate the ascending pharyngeal artery. Indeed, no cutting can be done deeper than the aponeurosis. I devised this instrument for the purpose of making the operation as easy and as safe as is practicable for those who lack the experience of the specialist. There has been recently too much of a tendency to recommend instruments and methods that are capable of doing harm, and, hence, to insist that the operation is of a major character, an expensive hospital procedure and beyond the ability and conveniences of the great body of general physicians. This attitude is in contravention of the true and traditional spirit of our calling and of the interests of our patrons.

Out of many hundreds of operations with the tonsillotome, I have had very few serious hemorrhages. At the present moment I can recall only three, and there was no bad result in these. The bleeding was controlled in every case in a very short time. I have never seen other than good results in any of my cases of tonsillotomy.

It may be interesting to cite another instance of the benefits of tonsillotomy; in this case I removed the tonsil on account of involvement of the corresponding ear. A school girl of nine years came to me complaining of sore throat, and deafness in one ear. She could hear my 60-inch watch only on contact with the auricle. I found the tonsil on the same side to be diseased. It had been subject to recurring inflammation for a considerable time, and I inferred that the inflammatory process extended through the eustachian tube to the tympanic cavity. I removed the tonsil and restored the throat and ear to a healthy condition, whereupon the hearing distance increased from contact with the ear to ten feet. This patient is now a married woman and is a mother and she has retained the above result up to the last time I examined her, about one year ago. Without removing the tonsil, which was the seat of recurring attacks of inflammation and a predisposing cause of deafness, I do not believe such gratifying remote results would have been obtained, the more particularly as there is a marked strain of ear diseases in the immediate and connected families.

Very little post-operative treatment is required for the operated surfaces. The cleansing solutions which have been already mentioned for acute tonsillitis may be used for a few days, but with care to avoid dislodging the coagula that have closed the mouths of the blood vessels. Otherwise a secondary hemorrhage might be induced.

While tonsillectomy may be advisable in certain cases it presents disadvantages and objections which cannot be urged against tonsillotomy properly performed. Enucleation of the whole tonsil leaves a large concavity at the side of the throat, which gives an unnatural contour to the pharynx. Tonsillotomy strikes a mean between the two extremes of an original convexity and an artificial concavity. Tonsillotomy leaves a modicum of tonsillar tissue to keep the faucial pillars apart, enabling them to play their part in voice production. It also permits a continuation of a modified function of the gland. In this connection it is appropriate to refer to the fact that we do not advise the removal of the whole body of the thyroid gland. The medium ground is not only suggestive but logical. Tonsillectomy is followed by the formation of extensive scar tissue and contraction, which cause a drawing sensation or constriction and sense of dryness of the throat. I have never known these symptoms to follow my operations with the tonsillotome.

As to hemorrhages, I doubt if the two operations present any considerable difference. If any anaesthetic is used, ethyl bromid is best.

The present generation is to be congratulated upon the tremendous interest that the medical profession has taken in throat diseases and the active and efficient means employed to relieve suffering and avert the secondary lamentable results. For these encouraging facts they are largely indebted to the enterprising medical journals and the efficient post-graduate medical schools. And the great body of medical practitioners should rejoice over the present advanced standard of practice and the steady forward march of its splendid achievements.

31 North State Street.

Burns.

℞ Iodoformi, ʒj. (4.0)
Acidi borici.
Antipyrinæ ää. ʒv. (20.0)
Vaselini, ʒvi. (192.0)
M. For external application. (*Paris Medical.*)

SUGGESTIONS IN EAR, NOSE AND THROAT CASES.

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Brooklyn.

When there is pus in the nose, coming from any source, the patient should be instructed how to blow his nose so as to prevent the pus from being forced into an uninvolved Eustachian tube or into a sinus by back pressure. The patient must blow the nose "wide open," that is, without pressure applied to the sides of the nose. The tendency to close one side of the nose and blow through the other side is one of the most frequent causes of pus being forced into some uninfected place and thus setting up a new focus.

Oil is much more apt to become rancid in the ear than in any other open container on account of the heat and moisture present. Always discourage the use of oil drops in the ear. It is nearly always one of the first things thought of by the patient and really one of the last to use. If plain hot water had to be obtained on prescription it would be much more often used than it is.

If rhubarb and soda had a fancy name and came in a pretty bottle wrapped with plenty of advertising matter, if the name was blown in the bottle and physicians were advised to order the original bottle, it would be more often used. It is one of the most valuable medicines we have in the treatment of nose and throat conditions. Gastro-intestinal disturbances cause many of these conditions and sometimes a specialist cannot see beyond the larynx.

When satisfactory nasal breathing is not obtained by an adenoid operation look for some obstruction in the nose itself. A crooked septum or mal-occlusion of the teeth and weak muscles of the jaw often make it impossible to properly close the mouth and breathe through the nose.

Lymphatics from the post nares lead to both tonsils. An infection in one side of the nose may cause tonsillitis on both sides.

Few children without adenoids have ear trouble in measles or scarlet fever. Frequent "colds in the head" in children is fairly conclusive evidence of adenoids or some other nasal obstruction. In frequently repeated attacks of laryngitis or pharyngitis look for gastro-intestinal disturbance. Faulty metabolism or anterior nasal obstruction are often found to be the cause of the above. A foreign body in the ear may be the cause of a cough. Adenoids or a foreign body in the nose or ear sometimes cause convulsions in children as well as a new tooth, phymosis or intestinal upset.

When examining a patient's throat take a good look at the tongue. A brown tongue suggests liver torpor, a red tongue shows intestinal derangement and suggests acids, a white tongue shows gastric disturbance and calls for alkalies. In doing all ear, nose and throat work remember that Chevalier Jackson says: "Look and see."

It is frequently necessary to spend more than six weeks in obtaining a thorough knowledge of any specialty.

Don't forget that patients who go to see a rhinologist have kidneys, liver and a stomach as well as all the other organs that other folks have. Don't be afraid to ask questions, always remembering that the general man can do the patient lots of good when his attention has been tactfully called to something he may have forgotten or overlooked in the hurry of a busy doctor's

life. The patient that wears cotton or linen next to the skin is very much better off than the one that wears wool. Don't do your work with instruments and sprays only. Advice on hygiene, exercise, diet, ventilation and heating of the home and workshop are all well worth paying for.

284 Hancock St.

Aphorisms on Deafness.

These excellent thoughts were presented at the last meeting of the Medical Society of the State of New York:

I believe that certain laws might be passed, which would render the intermarriage of those afflicted with impairment of hearing impossible. This, I think, would be a step in the right direction. Probably here, educational methods would do more than legislation. Many people, suffering from impairment of hearing, if they understood absolutely the condition which might exist in their offspring, would probably hesitate to marry. I believe that instruction along these lines will be of great value in the prevention of deafness.——E. B. DENCH.

No deaf child should be removed from home because of deafness. The mentally defective child, whether deaf or not, must be placed under permanent care, for his own sake and the sake of the community, but deaf children who are not mentally defective should reside in their own homes and associate with hearing people as much as possible.—HAROLD HAYS.

The home instruction of the deaf mute child should consist chiefly in an effort to make the visual and tactile centers of the brain take the place of the inoperative hearing center in the reception of oral language. The deaf child, therefore, should be talked to and talked at as much as possible and on every possible occasion. He should have more attention of this kind, and not less as is usual, on account of his deafness.—HAROLD HAYS.

It is encouraging to note the fact that special public schools for the education of deaf children are being introduced throughout America. One entire school building in the City of New York is devoted to children with defective hearing. Unfortunately, very young children still need to be instructed before reaching the school age, and herein lies a problem which needs the aid of the aurist who has the opportunity to impress upon the parents the necessity of making every sacrifice, both of time and money, in order to commence the training as soon as the patient would otherwise commence to talk. —WENDELL C. PHILLIPS.

The school instruction of otherwise normal deaf mute children may well be conducted in special day school classes, thus avoiding the necessity of removing them from their home environment and from their association with hearing people. At this period of their instruction, a suitable classification is desirable, so that the methods employed may best meet individual needs.—HAROLD HAYS.

We need to teach both the general profession and the public to know the importance of beginning ear trouble, in order that the patients may come early for treatment. Almost every acute ear disease begins in the nose or naso-pharynx. The pharyngoscope has fairly revolutionized the treatment of the naso-pharynx and eustachian tubes. We must teach people that we are prepared to cure early cases of catarrhal deafness due to some local disturbance.—I. W. VOORHEES.

General Scientific

SANITARY WELFARE OF WORKERS.*

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New York.

In the consideration of this subject, three questions naturally arise:

1st. What are the sanitary conditions to be considered in connection with welfare of the worker?

2nd. Why should such conditions be provided by employers?

3rd. How may the co-operation of the employees be secured?

In answer to the first question, on account of the limited time I can only enumerate the general subjects which in addition to prevention of accidents relate to the health of the employee to be considered in connection with industry.

Drinking water supplies	Lighting
Washing facilities	First aid
Laundries	Hospitals
Lockers	Trained nurses and social workers
Toilet arrangements	Physical examination of employees
Drainage and sewage disposal	Lunch buckets and lunch rooms
Disposition of garbage and rubbish	Commissaries (bread, meat)
Care of stables and animals	Milk supplies
Heating in winter	Flies, mosquitoes and vermin
Cooling in summer	Housing
Ventilation	Gardens
Overcrowding	Rest and recreation (Sunday rest, club houses)
Dust, gases and fumes	
Clean mills and yards	

In addition to the above subjects which relate to hygiene there are subjects in welfare work of more general scope, such as education, relief funds, compensation, insurance, pensions, opportunity for saving and investing.

In answer to the second question, those who employ labor are more and more realizing that the providing of sanitary conditions is conducive to economy, efficiency and contentment.

Under modern conditions the property of corporations belongs to many stockholders, only a few of whom are connected with the management. These managers are trustees of the property of others and as such trustees must always be able to justify their expenditures upon business principles. Far-sighted employers are coming to see that these things must be included as a part of the regular expenditures, and in the construction of new plants should be in the original investment. These things affect efficiency, and reasonable expenditures for such installation can be justified to stockholders.

Those of us who are fortunate enough to be connected with the work of bringing these subpects to the attention of busy men, must see to it that these problems are well worked out to definite conclusions and that we do not present haphazard suggestions.

Efficiency depends largely on health. Each of these subjects that I have enumerated is worth while for economic reasons. To show this, I will as rapidly as possible take up a few subjects and give some of the reasons in each case for its consideration.

Drinking Water Supplies.

What reasons shall we give to an employer for his consideration of the drinking water supply? The following physiological reasons may be urged as affecting the health of an employee and therefore efficiency.

*Read at the Safety and Sanitation Conference under auspices of the American Museum of Safety, December 11, 1913.

Water is a natural constituent of the body and is to be considered as a food, though not in the sense that it liberates energy. It affects secretion and excretion and the activity of the various organs. It aids in absorption of food and carries away waste. It diminishes fatigue. It regulates body temperature and acts as distributor of heat, thus equalizing temperature. The temperature of the water affects the healts, too much cold produces cramps. Impure water may cause disease. From water polluted with bacteria, such diseases as typhoid, dysentery and diarrhea arise. The financial value of pure and wholesome water has been computed by Whipple and put in terms of dollars and cents. Water may be polluted with metals and we may have symptoms of lead poisoning. Drinking cups used in common may cause disease. Drinking a sufficient amount of water lessens alcoholism. The drinking water then should be attractive and wholesome, its temperature regulated, the common cup abolished, and fountains used instead. Because these things can be justified to the employer, we can appeal not only to the humanitarian side of his nature, but also to his judgment as a business man.

Washing Facilities.

There are many physiological reasons why washing and bathing facilities should be established in connection with industrial plants. Cleanliness enhances one's self-respect and the respect of others. It shows consideration for the traveling public. Workmen should have an opportunity to wash before going home as the work of the home is burdensome enough without having brought into the house dirt that can be left behind. Cleanliness of hands is especially important because hands carry disease. Shower baths affect the vasomotor system and affect the circulation, affecting not only the circulation in the skin but also the circulation of the whole body. It produces a redistribution of the blood in the body and for the time being there is actual change in the blood itself. Cold showers increase capacity for muscular work. Showers eliminate more rapidly the products of waste and so constitute one of the methods of relieving fatigue. This has been conclusively shown by fatigue records, recorded by the ergograph by Maggiora, Vinaj, Kellogg and other investigators. The improvement can be expressed in figures. A shower removes waste products from the skin and makes one less liable to feel change in temperature. It is excellent for reducing the heat of the body, especially on humid days when the body temperature is apt to rise above normal.

Toilet Arrangements.

Of just as great economic importance is the construction of proper toilet facilities. Workmen do not always go to the water closet when they should because ofttimes such places are malodorous and unsanitary. Every workman should be encouraged to keep his bowels regular. Lack of proper movements may lead to constipation or to diarrhea, and this inevitably has an effect upon the general health. Frequently toxins are absorbed from the intestines, causing fatigue and lowering resistance of the system to other diseases, making a poor type of workman.

Thus, indol has been proven to induce fatigue. Indol is found in the large intestine as the result of bacterial putrefaction from certain kinds of albuminous foods. It is eliminated in part from the bowels; but is in part absorbed in the blood and subsequently eliminated in the urine, in the form of indican. Professor F. S. Lee, of Columbia University, has shown by fatigue records that an electrically stimulated muscle into which indol has been injected loses more than half of its efficiency.

Stables.

The economy of sanitary stables is still more apparent. In many cases the saving of paint on vehicles injured by ammoniacal fumes would almost pay for the installation of valley drains. Manure should be carted away daily so as not to breed flies, as flies are not only a menace to the neighborhood but annoy the animals, keeping them in poor condition. If animals are not so annoyed less oats can be fed.

Heating and Cooling.

Both heating and cooling must be considered because extremes of temperature are unfavorable to physical and mental powers. Cold weakens susceptibility to impressions. It drives the blood from the surface of the body to internal organs. It lowers resistance to disease. The very feeling of discomfort caused by cold tends in itself to inefficiency.

During the very cold winter of three years ago, there was a general increase of accidents in yards and mills. These accidents came from two causes: first, the lessened and dulled perception and benumbing effect of the cold, especially on those who worked in the yards; and second, the clumsiness of workmen from wearing too many clothes. In addition to heavy underclothes some wore two vests or two overcoats, and this double amount of clothing interfered with easy and rapid action of the body.

The large amount of clothing which the average workman arrays himself in in winter weather not only makes him clumsy but causes him to become overheated when at work, especially when going from cold to warmth. This is frequently a factor in the causation of the common cold.

Dangers from Carbon Monoxid.

In this connection we must consider the use of "salamanders." A "salamander" is a grate, open on the sides, burning usually coal or coke. The psychological effect of such an open fire is excellent, and from the standpoint of heat it answers the purpose for which it is intended. On account of gases generated, there is danger to workmen from this open fire when used inside of buildings.

The chief danger to workmen is from the inhalation of carbon monoxid. When we breathe, a certain quantity of oxygen is taken into the lungs; passes into the blood and is carried by the red material of the blood to the various tissues of the body, where it is used for the production of heat and energy. The red material of the blood here gives up its oxygen, and the blood takes up carbon dioxid and carries this to the lungs, from which it is exhaled.

Carbon monoxid has a greater affinity for the red material in the blood than has oxygen, making a more stable combination. The deleterious effect of carbon monoxid is due to the stability of combination with the red material in the blood, which reduces its oxygen-carrying power. Except in closed rooms, there is no immediate marked effect upon the workmen, because gases diffuse rapidly in the atmosphere. But the frequent breathing of even a small amount of the carbon monoxid will in time produce anemia. This statement is not made upon actual experiment but on clinical experience. If the air contains more than one per cent. of carbon monoxid, it may prove quickly fatal.

Humidity.

When the physiological effect of heat, combined with humidity, upon the system is properly understood by the laity, much will be done for the reduction of humidity and the cooling of work places in summer. Investigations have shown that on hot days when there is ex-

cessive humidity the body temperature rises and that this rise of temperature has a very distinct effect upon efficiency. Any elevation of temperature produces a condition of fatigue, and there is a greater destruction of protein material similar to that found in excessive work. In addition to the fever condition so brought about the blood is brought to the surface of the body and the internal organs correspondingly anemic thus lessening the normal impulses to the muscles. This in itself produces a tired feeling.

Everyone knows that ventilation is an important factor in hygiene and that overcrowding lowers vitality and lessens resistance to disease.

Clean Yards.

Clean and orderly yards are directly connected with safety. In a busy yard, with the moving of engines and the swinging of cranes, to stumble over a block of wood, or to slip upon a fruit skin or remains of a luncheon, may mean serious injury or cost a life. In addition, the psychologic effect of working in clean and orderly surroundings should not be overlooked. Grass plots and flowers about mills have a decided effect on the minds of men and a distinctly beneficial effect on individual life.

First Aid.

Immediate treatment of injuries has saved many wounds from becoming septic and many limbs from amputation. Much human suffering has been prevented and much litigation has been avoided.

I take my illustration of the value of first aid from an article by Dr. William O'Neill Sherman, Chief Surgeon of Carnegie Steel Company, who says:

"To give you an idea of the value of first aid properly administered I will say that during the past three years the Carnegie Steel Company has been able to reduce the number of infected cases from 5 per cent. to .1 per cent., or from 500 to slightly over 1 per 1,000 cases. The infected cases take three and a half times as long to recover as the non-infected cases. The number of amputations, excisions and stiff joints resulting from infected cases is very great, while in the non-infected cases it is reduced to a minimum. The economic gain must be apparent to everyone when the loss of time, expense of treating the cases, together with the resulting permanent disability, are taken into consideration. * * * A perusal of reports reveals the fact that 8,000 foreign bodies have been removed from the eyes by doctors and nurses of the company, without one complication resulting to an employee."

Gardens.

Of distinct economic value has been the encouragement given by employers to those living in mining and industrial villages by fencing in plots for gardens, assisting when necessary in plowing and fertilization, and stimulating the employees and encouraging them in thrift and industry by offering them prizes for the gardens. Gardens reduce the cost of living. The amount of vegetables grown is often more than enough for a family. Some have even a surplus to sell.

Gardens promote health by bringing the members of the family into the fresh air and sunshine; by cleaner yards and better care of drainage and waste, thus preventing odors, and by preventing the breeding of flies and mosquitoes; by providing a greater variety of food; for many too much meat, and an excess of flesh diet is not conducive to the best work, growth, or health; by the abolition or confining of small animals. Gardens promote morality, tending to keep the owner from the saloon and promoting his own self-respect. Gardens help make homes and have a refining influence on the family.

Thus I might go on and give illustrations of prevention of accidents by better lighting; of the advantages of sewage disposal and drainage; of prevention of dust, gases and fumes; of better housing; or how mosquitoes and flies are not only an annoyance and increase the cost of living by purchase of screens and are also a cause of disease; of how commissaries may be an aid to improve health by better food and also to reduce the cost of living; of the value of trained nurses in preventive work, and of her work not only in the first aid and in clinics, but of personal work in conferences in the homes, especially as to the preparation of food, household budgets, and instruction in general hygiene; of the effect of rest and recreation on health and morals; of the advantage of clean milk supplies, but time will not permit.

The Third Question.

In answer to the third question, how may we secure the co-operation of employees, we may say in general by education, though this is not the entire story. The workman must be shown that efforts put forth in these directions are for his benefit as well as that of the employer. They need to be educated in higher ideals of living, better standards of life, and some guidance is needed. This guidance should teach people to do things for themselves. Much paternalism is unwise and against public policy. Just as much can be done by the education of the workman in personal hygiene as in providing proper sanitary facilities. One of the difficulties in reaching workers is the fact that in large plants various languages are spoken. One means of education is by circulars, the circulars being in the languages spoken at the mills, and carefully written and distributed to each worker. In addition to asking his co-operation it is well to instruct them in personal hygiene and in first aid. In this latter each novice should be under instruction of experienced men until he knows the dangers to be avoided and has acquired the safety habit. Lectures, illustrated by slides, by trained workers, may be given in halls and reading rooms; and trained nurses and social workers may give personal instruction in the home. Committees of workmen themselves can render material aid.

Part of the difficulty in obtaining the co-operation of the worker has been some omission or improper construction in the installation. Thus in a case where shower baths were installed water was taken directly from polluted rivers which was too dirty to be used, and the employees made no use of the installation. Again, employees have made improper use of shower baths because a suitable toilet had not been provided. The soiling of seats in toilets has been largely due to improper construction and not to the desires of the men. Where there is no co-operation, investigation must be made and the cause ferreted out for there is always some underlying cause which can be removed, and the matter adjusted. In order to secure the co-operation of the men it must first be possible for them to co-operate.

In conclusion, I desire to emphasize the fact that the providing of such hygienic conditions as I have described and the work properly performed, means increased industrial efficiency and contented workmen. In the iron and steel and allied industries every subject herein touched upon has had careful consideration and the results of this consideration have been well carried out in actual constructive work, some companies excelling in one direction, some in others. Every subject has been well done at some place. In the industry as a whole, millions of dollars are being spent annually to improve conditions of labor.

30 Church Street

RENAL CALCULUS AND HYPERTROPHIED PROSTATE.

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Brooklyn, N. Y.

Gentlemen:—Instead of operating today I wish to present two very interesting cases for diagnosis and to say something about the etiology, etc. Next week I will operate on them. You will get more benefit from seeing the operation after we first discuss the case.

This man has a stone in his left kidney. I mention this now because I made the diagnosis before he was brought into the operating room.

Renal calculus is a very frequent and common affection. The stone is usually composed of uric acid crystals or of oxalates. The stones have either a nucleus of uric acid or oxalates, and then, as the urine becomes alkaline on account of the suppuration and deposit of phosphates formed around this nucleus, the stone becomes surrounded by phosphatic deposits in concentric layers.

The etiology of stone in the kidney may briefly be said to be the gouty diathesis. A few uric acid crystals become agglomerated in the renal tubules and remain either in situ or they enter the pelvis of the kidney and there become a nucleus for the formation of a calculus. After they enter the pelvis of the kidney they grow rapidly by a deposit of concentric layers of phosphatic salts around them and ultimately may fill up the whole pelvis of the kidney. These stones may be fixed —sort of encrustation on the side of the pelvis, but they are generally movable, in which case they have a ball valve effect in blocking the ureter.

After the stone has been present a short time, infection takes place with micro-organisms, pyelitis results, and after a few months or years a complete disorganization of the kidney follows and the kidney becomes a great pus cavity containing one or more stones in the center.

The ureters may be blocked permanently preventing the outflow of urine and the sac is distended and filled with urine, clear at first, but when infection takes place, as it always does in time, the hydronephrosis becomes converted into a pyo-nephrosis.

I will first describe the classical symptoms in cases of renal calculus, and then take up in detail the symptoms which this man presents. Nearly all cases of renal calculus suffer at some time from an attack of renal colic. The stone enters the ureter, and if it is small it is pushed along by the contraction of the ureter and passes down, finally dropping into the bladder, and is so gotten rid of. That is the case where there are only a few small uric acid crystals, or where the stone is very small. Of course, the passage of the calculus causes intense pain and the patient suffers a great deal. Renal colic, while it lasts, is one of the most painful affections we have to treat.

Renal colic does not always mean that the stone is passing through the ureter and the patient is going to get rid of it so easily, because very often the stone is larger and is forced by the muscular contractions into the mouth of the ureter and remains there setting up a sort of spasmodic action of the muscular fibers which gives rise to pain; then it drops back into the pelvis and the pain stops as suddenly as it began. The pain of renal colic is rather characteristic, depending upon which side the stone is located. There is always nausea and vomiting, and very often the pain is so intense that the patient goes into a state of collapse. His skin is cold and covered with sweat. Respiration is labored and he presents the symptoms of shock.

Sometimes, as a concomitant of renal colic, we have a complete suppression of urine from a reflex disturbance of the other kidney which is secreting. Of course, the kidney which is blocked has the stone in it and the urine cannot pass out, and sometimes as a result of the disturbance in this kidney, we have the condition where one stops secreting because of the reflex action, and the other cannot secrete because of the stone blocking the ureter, causing complete anuria.

Sometimes another condition which gives rise to suppression of urine, is extensive disease of the kidney. Take, for instance, a man with a stone in the kidney and a diseased kidney on the other side, due perhaps to renal calculus or pyelonephrosis. He has been living on this one kidney, and suddenly the stone blocks the ureter, the urine does not pass, the kidney shuts down and the man suffers from anuria until this condition is relieved, and then come the rare cases where there is only one kidney, either congenital or else a kidney which has been removed by nephrectomy.

The length of the attack of renal colic is very varied. It may continue a few minutes or several hours, depending upon what the stone does. If the calculus passes through and drops into the bladder the pain lasts for several hours; the stone is simply jammed in the ureter for only a few minutes.

Sometimes it happens that a stone enters the ureter and becomes lodged at some point blocking off the ureter entirely and preventing the outflow of urine. The kidney goes on secreting just the same, but the consequence is that it becomes distended with urine, and the parenchyma becomes thin. That is the condition to which we give the name hydronephrosis. Hydronephrosis may give away suddenly as soon as the stone is dislodged, but usually when hydronephrosis takes place it means thta the ureter is permanently blocked and generally requires a nephrectomy to relieve the condition.

Pain is almost invariably present, usually as a dull ache or as a sense of weight which is increased by pressure and also by exercise.

Hematuria is one of the signs we look for in every case of renal calculus, although it does not always occur. It comes and goes, and it is most likely to follow the colic for the reason that the passage of the stone through the ureter or the jamming of the stone into the mouth of the ureter breaks down the capillary blood vessels, and these bleed for several days after the injury has taken place. Pus in the urine is almost always present. I say almost always, for the reason that I operated on one case this year, which you saw, and that man had clear urine, although he had a stone in his kidney. The reason for clear urine was because the stone was imbedded in the parenchyma of the kidney, and it did not communicate with the pelvis of the kidney. There was no pyelitis, no suppuration, the stone being imbedded, and there was no opportunity for pus to appear in the pelvis of the kidney.

Ordinarily, where we have a stone in the pelvis of the kidney it always creates suppuration in the course of time, and then pus flows out from the pelvis of the kidney, through the ureter into the bladder. Disturbances of the urinary function are almost always present. The irritation of the stone in the kidney generally causes the kidney to secrete more than normally and more than the other kidney. That takes

place in the day, the stone moving around less. At night both kidneys secrete about equally.

Gastrointestinal disturbances are generally present, either reflex or from the imperfect elimination by the diseased kidney, causing the condition known of urosepsis.

The discharge of fragments of the calculus is a very valuable sign when it occurs, but it does not occur in every case, although many patients do pass bits of calculus or bits of sand, gravel or grit.

Having gone over the classical symptoms of stone in the kidney, I will read you the history of this patient, and then we will see in what respect he differs from the classical conditions laid down in the books.

The patient is 47 years of age. His present trouble began five years ago. He says his urine was retained and that he had great pain, which was relieved by the catheter. Now, there was no suppression of urine in this case, but there was retention of urine in the bladder. I asked him if it was due to a stone which had passed down through the ureter and then perhaps got into the neck of the bladder. He says that he does not know; that it might have been, but that is very likely what took place. The stone probably passed down, dropped into the bladder, and blocked up the urethra which kept the baldder from emptying itself. He says he never felt as well after that; that the flow of urine was never the same, and that it was somewhat irregular and slow. This trouble in the bladder stopped about three years ago and then the secretion of urine became excessive and pus began to appear in the urine in very large quantities. For the last three years he has had pus in his urine in large quantities. He says that he never had any pain in his kidney region and never had any blood in his urine.

Now, that history, which is vague, does not point to the kidney at all. The only thing that we have to go on is a large amount of pus in the urine. One would naturally think the man has a stricture, or stone in the bladder, but I have examined him and he has no stricture; the cystoscope shows a perfectly healthy bladder. I had to account for the excessively large quantities of pus and I said: "The bladder is healthy; there are large quantities of pus here and it must come from one or both kidneys. The question is, is it a stone in the kidney; is it a tuberculous kidney; or is it a pyelitis due to infection from the colon, bacilli or other organisms?"

In order to make a diagnosis we must go over the case step by step.

In analyzing his history we look for the symptoms of renal calculus, hematuria and the passage of fragments, all of which are entirely absent in his case. All he has is the persistent pyuria. We have to differentiate from other diseases of the kidney, kidney tuberculosis, hydronephroma, etc. All of these were considered, but he has none of them. We have only the frequent urination and pus in the urine. In making our examination, of course, the first thing we did was to learn what could be found by palpation, but this shows nothing. Neither kidney is enlarged and there is no pain on pressure. The diagnosis is not assisted at all by palpation.

The next step consists in making a radiograph, and that was done by Dr. Smith, and we find this condition (holding up the plate). There is a big mass here and a black shadow there. Here is the spinal column and here is the color. The man had castor oil before the radiograph was made, but he was not cleaned out sufficiently, and Dr. Smith thinks those are fecal deposits in the colon. A shadow like that might be a stone, but it is too solid and black. The right side we assume to be normal. We find a different condition of things on the left side. We find there is a shadow about as large around as a 5-cent piece in the pelvis of the left kidney.

Examination of the urine drawn from the bladder simply showed large quantities of pus.

The next step consisted in using the cystoscope, and I found a perfectly normal bladder, but on watching the left side I could see purulent urine coming down through the ureter in jets. I catheterized the ureters and at the same time used the indigo carmin test. This test is a very valuable method of showing the relative action of the two kidneys simultaneously. It is used by injecting hypodermatically a tablet of indigo carmin dissolved in ten Cc. of water under the skin, and in about eight minutes both kidneys, if they are normal, will begin to secrete blue urine. Watching the ureters with the cystoscope we find a blue swirl coming out of both ureters, in about eight to ten minutes, in a normal case. In this case the indigo carmin returned from the right kidney in eight minutes, and on the left side, although we left the catheter in for twenty-five minutes, there was no return of the indigo carmin. We had, then, indigo carmin in eight minutes on the right side and on the left side no indigo carmin at all, showing that there was some impairment in the secretion of the kidney on the left side. Another point was that while we were collecting the urine from the two sides, the right side secreted about the normal amount in the time of twenty-five minutes, whereas the left side secreted twice as much. I spoke of the irritation which causes the kidney to secrete more urine on the side which has the stone and that was borne out in this case because the suspected kidney secreted a great deal more urine.

The urinary report of the right and left urines, which we examined as soon as they were collected, showed as follows: The right kidney showed eight grains of urea with no pus. The left kidney showed three grains of urea and large quantities of pus.

In going over the case we find the radiograph shows a shadow in the left side. Large quantities of pus are secreted from the left side. The indigo carmin is very much delayed or was not present at all on this left side. On the right side we have a normal secreting kidney.

Now, as to the condition of the right kidney. Whether or not it is normal is a very important question not only for the point of differential diagnosis, but also to know how to treat the case. You recall a few weeks ago another patient in whom we found a stone in the kidney which was comparatively normal and we found the other kidney affected with chronic nephritis, which made it necessary to treat the kidney with the stone in it very conservatively and not remove it. In the present case we know the kidney on the right side is perfectly normal. We know that on the left side is a hard stone, that the kidney is badly disorganized, that it secretes only three grains of urea, and we know that nephrectomy is the best procedure and that it is perfectly safe for the reason that we have a normal kidney on this side. That is one of the points in making a diagnosis.

As to the prognosis in these cases of stone in the kidney. The stone grows continually larger and ultimately destroys the kidney by setting up a pyelitis. If the stone lasts long enough the kidney becomes entirely destroyed, and besides that, the patient is always running the risk of suppression of urine from the blocking

of the ureter or an abscess from an ulceration through the wall of the kidney and the discharge of pus surrounding the kidney.

One word as to treatment. First we must consider the treatment of renal colic. In an ordinary case of renal colic a hot bath and a hypodermic of morphia will generally relieve the pain. Sometimes the pain is so severe that the patient has to be etherized, and under the effect of the ether the stone may pass through the ureter into the bladder or drop back into the pelvis of the kidney and the colic will be relieved. Of course, renal colic is only a symptom to be taken care of temporarily. We never operate during an attack of renal colic because the parts are congested. We always operate in the intervals, but all these cases of stone mean operation. It is not possible to dissolve a stone in the kidney any more than one can dissolve a stone in the street by pouring water on it.

The operation which I do depends entirely upon the state of the kidney and size of the stone.

If the stone is small and the kidney not disorganized posterior pyelotomy is the operation of choice.

If the stone is larger and we cannot get it out with such a small incision, we make our incision through the posterior convex border of the kidney and take it out in that way, and that is known as nephro lithotomy. When we get a kidney which is disorganized, broken down, and there is no use in trying to save any part of it, provided we know the kidney is healthy on the other side, it is more conservative and better for the patient to do a nephrectomy. The trouble about trying to save a broken-down kidney is that they do not heal. They usually have hemorrhages after the operation and they suppurate as they usually require a subsequent nephrectomy, it is much better and safer and more conservative to do a nephrectomy at the beginning.

Having made a diagnosis in this case we will operate next Thursday.

Question by Auditor and Answer by Dr. Morton.

Q. What would you do if the other kidney was not normal?

O. We would do a pyelotomy, remove the stone and leave the kidney in and let the patient struggle along as best he could, but the prognosis would be very much worse. A man can live indefinitely with one kidney.

General Remarks on Hypertrophied Prostate.

We have had several cases of enlarged prostates, representing the different phases of the disease.

In Guyon's classification the first stage of hypertrophied prostate is the period when the patient simply complains of difficulty in starting the flow of urine, inefficiency in the force of the stream, frequent calls to urinate at night and no residual urine. That may last for several years and then comes the second stage, insufficiency of the bladder. The patient passes some water, but still holds back a good deal and there is always an unsatisfied feeling due to the amount of residual urine. On introducing the catheter we always find from 4 to 10 ounces of reidual urine. This condition may last for severa lyears and finally an attack of complete retention comes on and then begins the third stage or period of incontinence. In the period of incontinence the bladder becomes diseased. There is usually frequent urination, sometimes with an involuntary escape of a few drops of urine, and the patient is constantly wetting himself, his trousers and underclothes, so-called paradoxic ischuria. That means that the bladder is full to the umbilicus; a few drops escape from the overtaxed sphincter and trickle down, but the bladder remains filled constantly. It is just like the overflow from a full bucket of water. If you pour any more in, the water leaks out over the sides.

This old gentleman represents the condition of the beginning of the third stage. He came into the hospital and his bladder was full up to the umbilicus.

The percussion note is flat and on palpating the abdomen I am able to feel the big tumor of the bladder, filled with urine.

This condition of the third stage, or period of incontinence, is ushered in, as all these cases are, by an attack of complete retention. He has been passing his water pretty well, getting up at night, and frequently during the day, but for some reason, catching cold or the approach of winter weather, the sphincter has shut down and he cannot pass a drop, and he came into the hospital yesterday suffering intensely. Finally it has come to the point where he cannot pass any water, and from now on he will probably have to lead a catheter life or have a prostatectomy done.

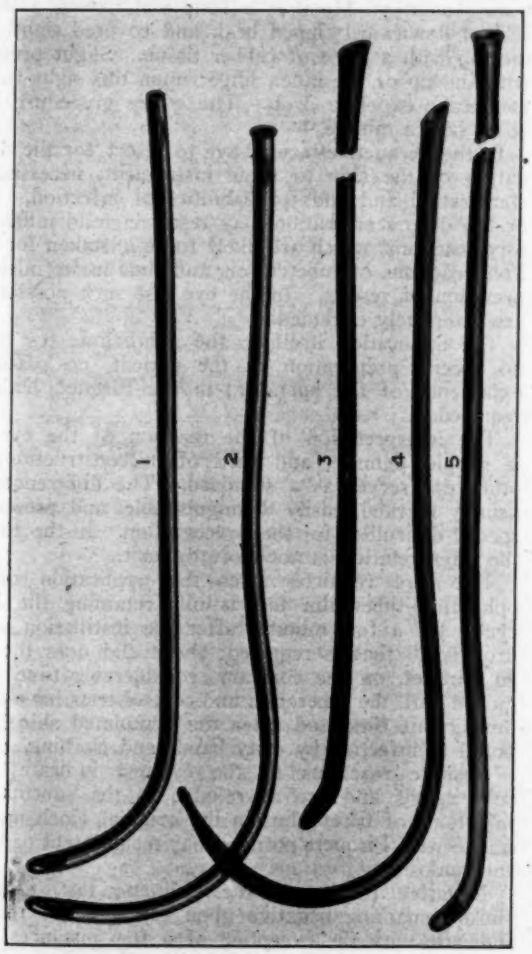
In all these cases of the third stage of prostate hypertrophy, with a fully distended bladder up to here, the element that enters in most into the general pathological condition of the patient is the back pressure, from the distended bladder on the ureters and on the kidneys. The back pressure is the highly important feature and is the cause of pyelitis and pyelonephritis which always accompanies these cases after they have lasted for any length of time.

The bladder is full, the ureters are distended and so are the pelves of the kidneys. The first effect of this back pressure and distension is to force the kidneys into a state of congestion. The next thing is a cystitis which begins in the bladder and the first thing we know an ascending infection from the bladder takes place—pyleitis occurs, which is soon converted into a pyelonephritis, and then we have the symptoms of general intoxication as a result of want of elimination on the part of the kidneys. The cystitis which accompanies this condition causes erosions in the bladder which is full of pus and microorganisms, and the toxins of these microorganisms are absorbed and we have a condition of absorption from the bladder and want of elimination by the kidneys which throws the patient into the condition of urosepsis. When urosepsis begins it is always marked by more or less constitutional disturbance. Usually it is slight and the patient does not know what ails him. He has a loss of appetite, flatulence and suffers from constipation and dyspepsia. The tongue is dry and brown, he slowly emaciates, has a slight rise of temperature to 100 or 100½ degrees, and through the day he is drowsy, and if he sits down he goes to sleep. He is mentally dull and if he is an active man, a man of affairs, he loses his grip on things. This condition is entirely due to the toxemia, due to the absorption of toxic material from the bladder and a failure of elmination on the part of the kidneys.

This man is very much in this condition. His skin is dry and he is beginning to emaciate. His tongue is very characteristic, dry as a piece of leather. You always find that in urosepsis.

The diagnosis in this case can be made by feeling the enlarged prostate. We have not been able to go through with the systematic examination because the man is in bad condition and we have to do as little as we can to relieve him, and we have to avoid instrumentation just as much as possible. When he came in here suffering from retention with the bladder up to the umbilicus, the first thing we did was to attempt to relieve him. I want

to say that of all things that you do when you are called in to see an old man with his bladder distended to the umbilicus, do not by any means draw off all that water at one time, for if you do you will probably kill him. There are many old men who have been killed by the use of the catheter in the hands of an over-zealous doctor because he did not know enough to leave some water in. If you draw off all the water at once the bladder collapses. The back pressure is relieved, but the taking off suddenly of the back pressure throws the kidneys into a state of congestion, they stop secreting and the man dies of suppression of urine four or five days after. The doctor is as much responsible for the death of that old man as if he had taken a club and hit him on the head; so in all these cases if you forget everything else you have seen or heard here today just remember this one thing: when you see an old man with his bladder up to here and you put a catheter in leave 8, 10 or 12 ounces of urine in his bladder and do not



CATHETERS FOR ENLARGED PROSTATES.

1. Van Buren curve, used when no enlargement of prostate is present.
2. Prostatic curve.
3. Woven silk catheter flattened laterally.
4. Woven silk catheter, with exaggerated prostatic curve.
5. Woven silk catheter with mercier curve.

empty the bladder entirely. About one patient out of three will die in this condition where the bladder is emptied entirely.

Now, some points as to the method of treating retention of urine.

Let me say a word as to catheters. Here are the different forms of prostatic catheter. You see that the prostatic catheter is very different from the ordinary catheter. This is the catheter which is most useful in most of these cases. Observe the exaggerated curve. The reason for that is that it is intended to slip over the enlargement of the prostate. Where you have a great big projecting ball valve lobe in the prostate and you take an ordinary catheter it hits against the projecting lobe of the prostate and does not enter the bladder. Take a catheter with an exaggerated curve and it goes over the prostate into the bladder and draws the urine almost every time. Sometimes we use this catheter which will take even a more exaggerated curve, than the one you have just seen. This other form of catheter is very useful because it is flattened from side to side and you find the lobes of the prostate and the urethra is flattened in this way, and a flat catheter will sometimes enter when others will not. Those are about the forms of catheter most generally used, but with these forms of catheters you can get into almost anything if there is any chance at all.

Suppose you are in the country and canont get assistance, what are you to do if you cannot pass a catheter after a reasonable effort to get it in? Take an aspirator and plunge it in above the pubis and strike the bladder with your aspirator and you can withdraw enough fluid so that the patient's intense suffering is relieved.

In the case of this old gentleman we will empty his bladder gradually. It will take about a week. We will pass a catheter about four times a day and we will draw off about 10, 12, 14 or 15 ounces at a time. He will secrete probably forty or fifty ounces a day. We will draw off forty-eight ounces, and allow a little more for the residual urine, so that we will gradually reduce his residual urine until it gets down to practically nothing.

When the bladder is empty we will put in a permanent catheter and leave it there and keep the bladder drained all the time, probably for another week, and we will wash out the bladder and treat the cystitis, but by keeping the bladder empty we stop the absorption from the bladder and he does not suffer from that element of the toxemia.

We will keep the bladder empty and wash it out and in order to keep the kidneys active we will force water on him by mouth, three or four quarts a day, as often as we can and as often as he will take it, and in addition to that, we will keep the bladder aseptic by means of urotropin.

There is one point in connection with urotropin which I would like to mention right here and to which attention has quite recently been called. We used to think that urotropin was always good in the bladder, but it has been found recently in England and also in Johns Hopkins that urotropin is not broken up into formalin in the presence of alkaline urine, so when the urine in the bladder is alkaline there is no use of giving urotropin. In order to get any antiseptic action from urotropin, the urine must be acid. To convert the alkaline urine to acid we give boracic acid, benzoate of soda or acid sodium phosphate. The last is about the best, 30-grain doses three times a day. That in connectio nwith urotropin will really have an efficient action on the cystitis, destroying the germs by converting the alkaline into acid urine. In the cases of most of these old men with enlarged prostates and cystitis, we find the urine alkaline.

After we have treated this case by urotropin and large quantities of water and bladder drainage, we must always bear in mind the danger of suppression of urine because that is the fear constantly hovering over a man

with an enlarged prostate, and is a condition which may come on at any time. After getting him into a fairly good condition I will advise him to have his prostate taken out.

Prostatectomy with the proper preliminary treatment is a fairly safe operation. The mortality rate is comparatively low even in such a dangerous state as this provided we take proper care of the patient before operation, provided we operate rapidly and provided we know how to take care of him after the operation.

The question is as to how we shall decide when it is safe to operate on a patient. You all know the improvement in any case is first the improvement in his general condition. When the tongue, dry and brown, becomes moist he will begin to take some nourishment. He will sweat naturally, comfortably and pleasantly. The urine instead of being of a low specific gravity (and you know that in all these cases there is a low specific gravity and polyuria), will be increased, the quantity will be reduced, and the alkaline reaction will be changed.

Another very admirable and excellent test in these cases is the test devised and introduced by Young and Geragthy of Johns Hopkins, known as the phenolsulphonethalein test. The thalein is injected hypodermically and eliminated by the kidneys, and then we note the amount which is returned in one and two hours, and if the amount returned is sufficient we know the kidneys are secreting enough and the patient will be able to stand the strain of an operation.

When the time of appearance of the phthalein is delayed 25 minutes or more, and 20 per cent. or less of the drug is recovered during the first hour, we know then it is unsafe to operate, for the patient's kidneys will not stand the strain. We depend then for guides, as to the time when it is safe to operate in these cases, first, on the general condition of the urine, its specific gravity and the quantity and the character of the thalein test.

We will send this patient back to the ward and carry out the treatment as I have outlined it and probably in the course of two weeks' time he will be in shape for operation, and we will be able to operate with a fair degree of success, whereas if I had operated on him today (he only came in yesterday), I most probably would have killed him just as if I had put in a catheter and drained off the urine at one time.

A Case of Scabies.

This is a patient who just came into the hospital and who could not pass his water. The youngster's foreskin was swollen and edematous. It is covered with a rash which he has all over his body, on his hands and between his fingers, but his face and the upper part of the body are clear. What does that mean as far as localization is concerned? What skin disease has he? That is the typical localization of scabies.

It generally begins between the fingers and then spreads to the foreskin and penis, because the patient conveys the mites to the penis when he holds it in his hand to urinate.

The next favorite point of localization are the buttocks, especially in persons like cobblers who sit.

The scabies mite always picks out a nice quiet place where it will be undisturbed and so in women the favorite seat for them is under the breasts and around the waist where the clothes are tied.

The treatment for the case will consist in soaking the penis in hot sitz baths and putting powdered sulphur in the bed to kill the scabies, and just as soon as this inflammatory condition goes down we will do a circumcision and remove the redundant foreskin.

32 Schermerhorn St.

Ophthalmo-Tuberculin Reaction vs. Pirquet.

Gutman warmly defends this reaction, as it is without danger, very reliable, and serves the purpose as well if not better than the Pirquet. Hence it deserves a better fate than neglect or abandonment. The different opinions are of course due to unsatisfactory results, but these were more likely obtained from faulty material or other causes than by the fault of the test itself, For the Pirquet, everybody seems to employ the original Old Tuberculin Koch, the standard of tuberculins, while for the ophthalmo-tuberculin test the substances used, though prepared from the original Tuberculin Koch, yet in various manners, of varying sensitiveness, and therefore permitting variability of results when employed in the testing of individuals for tuberculosis.

In the favor of this test, Gutman observes that the technic is extremely simple. All it needs is the eversion of an eyelid and the dropping of one drop of the testing solution. He uses a little vial having a hook-shaped downward tipped beak and covered tightly on the top with a piece of rubber tissue. Slight pressure with the tip of the index finger upon this tight rubber membrane expels a drop. The whole procedure lasts about half a minute.

In the Pirquet tests we have to resort for the denudation of the skin to some instrument, necessitating sterilization and adds probabilities of infection. This or too deep scarification may result in mild inflammatory reactions, which are likely to be mistaken for positive reactions of tuberculosis and thus invite misinterpretation of results. In the eye test such possibilities are completely excluded.

The application itself in the ophthalmic test needs no special preparation of the patient, no particular experience of the operator; in the Pirquet, both are required.

The interpretation of the reaction of the eye test is simple, definite, and hard of misconstruction; the other eye serves as a standard. The differences are usually marked, easily distinguishable, and present no special difficulties for their recognition. In the Pirquet the interpretation is not more difficult.

The care required after the application of the ophthalmo-tuberculin test is nil; retaining the lower eyelid for a few minutes after the instillation of the drop is all that is required; the eyelid does the rest. In Pirquet, on the contrary, considerable time is required until the tuberculin and control tests have dried; during this time and after the denudated skin is exposed to infection by dirty hands and clothing.

Positive reactions of the eye-test indicate active tuberculosis and are as reliable as the subcutaneous injections of tuberculins in the original Koch method; not so with Pirquet; positive may mean latent or healed tuberculosis.

Negative results of the Calmette test, especially those remaining negative upon repetition of the test, indicate, with the exception of a few instances previously cited, the absence of active tuberculosis, neither latent nor cured, as does the Pirquet.

Special dangers, particular contra-indications, or serious consequences are no more associated with the ophthalmic test than with any other, including the Pirquet.—(*Archives of Diagnosis*, Oct., 1913.)

Tuberculosis of the liver, in spite of the cavities full of bile-stained fluid, never causes jaundice, and actinomycosis, liver abscess, and hydatid disease only very exceptionally.

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Medical Economics and Legislation.

Henry G. Webster, editor of the *Long Island Medical Journal,* makes a plea in the December issue for unity among physicians, and points out how the system of selecting legislative committees to watch legislation affecting the profession fails to secure good results. The medical men selected are busy practitioners and are unpaid for their services. This is an archaic situation and in itself proves that there is no organic unity in the same sense that we see it in other professions and in the trades. Our organization is too loose. Webster points out that every railroad, trade and labor union maintains a paid central bureau and publishes comprehensive bulletins to all members, who, in turn, stand ready to contribute time, effort and money to see that their rights are maintained. Webster thinks that the physicians of this country ought to adopt similar means to see that the profession to which they belong is properly represented and effectively handled, so that instead of indignant protest that comes too late we may employ efficient prevision and put to practical use the method of prevention which we recognize as so essential in our calling.

Many excellent proposals of this sort are made from time to time by various thinkers. We have plenty of thinkers. They have pointed out exhaustively and accurately all our shortcomings, but we fail to observe an excited profession working feverishly toward indicated goals. What Webster says we ought to do we will not do. What possible power or suasion is there that could make the profession move in this manner on Albany? Academic discussion, all. We are very keen in respect to our technical accomplishments; deeply interested in vaccine therapy and the fulguration of bladder growths and all that. It is not at all likely, however, that medical men will ever find it possible to get keenly interested in matters of legislation and economics, despite really acute need. That sort of thing seems inherently foreign to the medical man's make-up and mental inclinations.

Community Medicine and Hypochondriasis.

Objection has been made by certain critics to the scheme fostered by insurance companies and eminent citizens who are making public health one of their chief interests on the ground that regular physical examinations by the public medical institutes which are to be established will tend to make people hypochondriacal. The idea, it will be remembered, is to induce everybody to go to such institutes once or twice a year and be thoroughly examined, with a view to disease prevention. There is no doubt that the first applicants will be hypochondriacs, and it would seem that between this class and the neurotic people whose habits of morbid introspection would be intensified by examinations of the sort proposed the institute staffs would waste much energy and the aims and objects of the scheme be hampered, to say the least.

It is our belief that the objection noted is a well-founded one and that it will have to be met squarely and not ignored. We believe that it can be met in the manner herewith suggested. Hermann M. Biggs proposes that we induce every individual, *after reaching the age of forty-five,* to be thoroughly examined about once a year. He takes forty-five as the proper time to begin such inspections because there has been an extraordinary decrease in the death rate under forty, whereas the death rate over forty is increasing. In other words, we are saving the young only to let them fall victims to vascular and renal ailments later. While the method proposed by Biggs meets the special need indicated by him, it would also meet, in large measure, the objection in respect to the fostering of hychochondriasis, for the functional and psychic neurotic element in the applicants would be far less operative at forty-five, organic deteriorations then coming to the fore. The MEDICAL TIMES submits this supplementary suggestion to Dr. Biggs and to the sponsors of the proposed institutes.

Vivisection.

In looking over the literature of the anti-vivisection propagandists, it is very seldom that one encounters anything representing sound and serious argument or proposal. About the most sensible and practicable proposal made by the anti-vivisectionists is that of Van Dyke, of Princeton. He thinks that anesthetics should always be employed, that the practice of vivisection should be restricted to scientific research in the hands of authorized investigators, and that the use of vivisection in schools and colleges for purposes of teaching and demonstration of facts already known should be stopped.

If vivisection is the totally immoral and indefensible thing that its opponents insist that it is, then it would seem to follow that the use of anything derived from it ought to be abandoned. We can understand how the anti-vivisectionists would, if they could, prevent any further progress based upon animal experimentation. To be consistent in the fanaticism, they should condemn such devices as the Murphy button, which, of course, had to be tried out on dogs before it could be used upon human beings.

Medical Editorial Table

The Margin of Error in Medicine.

There is, of course, a considerable margin of liability to error in all medical diagnosis. That medicine is infallible has never been alleged since the days of alchemists and astrologers. Since that time, however, its margin of error has been growing steadily smaller. That it is not yet an exact science is nothing to its discredit, for it is yearly still approaching new goals of accuracy. Ultimately, perhaps, the margin of error may become reduced to a minimum, but it is likely always to exist so long as medicine, though a science, is practised by and concerned with mutable human beings. Cabot studied 1,402 autopsy records at the Massachusetts General Hospital. In this series he found the clinical diagnosis correct in 844 cases and erroneous in 558. Errors in cardiac diagnosis were most frequent. Of the 558 errors, 387 were in cases in which cardiac disease was correctly diagnosticated, but the exact lesion was missed. Babson, an analyst and statistician, studied 2,500 cases on the bases of clinical diagnosis, the statement on the death certificate, and the post-mortem findings. In diabetes he finds that 55 per cent. were correctly diagnosticated during the life of the patient, and 95 per cent. on the death certificate; in typhoid fever, 30 per cent. and 90 per cent., respectively; in pneumonia, 30 per cent. and 74 per cent.; in cancer, 35 per cent. and 70 per cent.; in tuberculosis, 25 per cent. and 50 per cent., and in heart disease, 20 per cent. and 40 per cent. It is interesting to note that in both Dr. Cabot's and Mr. Babson's series diabetes was apparently the most accurately and heart disease the least accurately diagnosticated.—(*Boston Med. and Surg. Jour.*, Dec. 18, 1913.)

Radium in the Treatment of Cancer.

Howard A. Kelly and Robert Abbe urge that cancer, when so situated that it is possible to place the radioactive substance into contact with it, is curable. Their results are in keeping with the observations of Louis Wickham, of Paris, who has long preached that, properly used, radium can master, not only cutaneous epitheliomata, but also grave cases of cancer situated in other accessible regions. Sarcoma in its various forms, he found to yield to radiation even more quickly than epithelioma, while lymphadenomata and growths due to *Mycosis fungoides* proved also very susceptible to its effects. Surgical removal is advocated whenever possible, the limited amount of radium available at the present time rendering a prolonged wait to receive its benefits dangerous in the extreme—owing, doubtless, to the sudden exacerbation of growth and other complications which would thus be given time to develop. Fortunately, the dearth of radium will in time be remedied. Radium therapy has, like other valuable methods, received its share of criticism owing to the wide field over which its virtues seem to be steadily extending. It is becoming increasingly evident, however, that successful results can be expected only when the operator is possessed of sufficient radium to obtain good results, and provided he has the considerable experience required to use it judiciously.—(*New York Med. Jour.*, Dec. 20, 1913.)

The Future of the Profession.

A recent editorial in the Cincinnati *Times-Star* voices the opinion of all intelligent men who have an eye on public affairs so clearly and prophetically that it is a pleasure to quote it. The *Times-Star* says: "If the effort to minimize politics in municipal government is a success, there will inevitably come into being a class of highly trained men who will make the public service their profession. They will go into it as a life work. They will build up their separate reputations; their services will be secured by the various cities on a strictly business basis, just as the services of similar men are arranged for by private corporations, without regard to politics." Never before has the physician been so widely identified with the life of the people as at present. There has never been a time in history when the science and art of medicine needed more those who measure up to the newer standards that are being set, and there will be rich rewards for them in public esteem and a place in public life that no merely secular statesman may attain if they take up honorable careers in the public service. These careers will be as health officers, hospital superintendents and school examiners and will also find expression in the community management of endemic diseases, the management of municipal departments, such as those of charities and corrections, which are essentially medical activities, and in full-time clinical professorships such as have been established at Johns Hopkins, in which the incumbents can devote every energy to the clinical study of disease.—(*Lancet-Clinic*, Dec. 20, 1913.)

The Diseases of Successful Men.

The alleged high tension of modern life has been the stock-in-trade of all those who are attempting to explain the assumed increase of certain diseases which were formerly unrecognized; but it is high time to inquire whether there really is any increase of tension. In a nation of a hundred millions it is quite natural that quite a number of prominent men should die in their prime, but the percentage is probably less than in past centuries, and infinitely less than when every man died in his prime. Men who work themselves to death are probably very few indeed, and, while we must continue to call attention to the dangers of overstrenuousness, we should avoid those exaggerations which are becoming so numerous in the press, both lay and medical. Men rust out more often than they wear out, and we would be in better business to find the exact causes of death of prominent men and whether the struggle for prominence was one of them. We need not worry over the struggle for mere existence, for that is necessarily wholesome. As a matter of fact, the vagabond who will not or cannot work has the severest struggle of all. Heavy muscular labor, on the other hand, is equally lethal, and clergymen, who are relieved of it, are the longest lived. Successful men of affairs are also almost always relieved of such strains, though they often die of the results of early labors, and perhaps at the same rate as porters, farmers, and mechanics. Their nerve strains seem to be of minor effect, as they are the very ones constitutionally fit for them. The exact causes of death then must be found out, lest we make a fatal mistake of easing up labors which are in fact beneficial. Let our crusade be directed against muscular over-strenuousness whose harm has been amply proved. Hard brain workers must learn how to relax, and then their labors will do no harm.—(*Interstate Med. Jour.*, Dec., 1913.)

Salvarsan and mercury are more effective than 606 alone.

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

Introduction.

A miscellany column is a happy assignment for the free lance in medical journalism. Pleasantries, protests, philosophic reflections, plain news, even inconsistencies, may be expected to flow from the fortunate assignee's pen, but let us hope that his enthusiasm will serve only to quicken intellectual opsonins and not lead, let us say, to the perpetration of bad verses, or better still, any verses at all. With no field of medicine closed to him, how could there be serious failure to make such a column an interesting feature of a journal which is making every effort to satisfy the needs of a high class medical clientele which is constantly increasing because medical men find that the MEDICAL TIMES delivers the goods they want?

As to the inconsistencies aforesaid, the writer believes that such things are the bugbears of little minds. If we are going to say anything worth while, surely we are prepared to change points of view in accordance with growth and progress, and there are no immutable dogmas in medicine. This is not making a fool of one's self in Stevenson's sense, when he said that every earnest man must be expected to do so and ought not to be afraid to do so. We shall try not to do that, but should we prove the truth of his dictum, let us hope that our readers will judge and forgive in the Stevensonian spirit, which takes a man's whole performance as the proper criterion of merit. Take what you want and, if you like, swear at the rest or call the sinner to account man fashion, the pleasantest and most edifying experience in the world for the red-blooded and sound at heart, and the paradoxical basis of much good will, respect, and enduring friendship.

The eugenists ought to erect a monument to Charles Lamb, for here was a bachelor who, judged by eugenic standards, was unfit for parenthood and substituted a celibate but highly creative life for procreation. Yet, if one reads his pathetic reverie, Dream-Children, one sees in him an ideal father, the eugenists notwithstanding. Lamb was an alcoholic and was not well-balanced mentally, and had some defect in a lower limb. He also stammered. Doubtless, there are parents who would pass a good eugenic examination who lack Lamb's qualifications for parenthood in certain respects —in such respects as are indicated in the reverie— but we suppose the eugenists would call this sophistry. At any rate, the thought suggests itself that the bachelor ought to be an heroic figure in the community. His excuses for not marrying ought to take on a transcendent coloration.

Instead of being viewed as a selfish individual, Lamb should be considered a racial altruist who elects celibacy from the highest motives. He who has seldom been given the benefit of the doubt will now be regarded with awesome reverence. He is himself the most practical negative eugenist. His kind of race suicide is the most praiseworthy. It is too bad that the fanatical eugenists do not emulate him, for their very fanaticism denotes a bad inheritance factor. A fanatical eugenist is certainly no better than a defective bachelor, viewed as a procreator. A multiplication of bachelors would be a most wholesome social phenomenon, but we shall not see it, for most men could never attain the bachelor's high plane of conduct. We bespeak bay leaves for that noblest of figures, the much maligned bachelor. For him the crown who sacrifices a doubtful paternity. And for the Lambs, monuments and the encomiums of all men.

One occasionally sees in the medical press articles dealing with the therapeutics of the ancients. They are distinguished for pretentious erudition, but are absolutely worthless and puerile as regards practical value, and of mighty little interest from any point of view. We are keenly interested in the history of medicine, but we conceive that to be something different from the tiresome recital of how some Roman physician treated a boil. It is all right for these data to be recorded in reference works, but there is no good reason why the columns of a modern journal should be taken up by them. Two of our American journals in particular give considerable space to the lucubrations of certain antiquarians.

There is every reason why such modern and important researches and papers as those of the eighteenth century on digitalis should be set forth again, but we notice that they are neglected. We harbor the suspicion that the Dublin and Boston writers of the jejune flub-dub to which we have animadverted are actuated by a determination to air their curious and useless lore because it enables them to display pedantic familiarity with obsolete "classics," an accomplishment which no longer confers the prestige upon medical men that it once did in an age when our science and art were weak and doctors had to substitute pose for power. We have to bear many trials in the way of tiresome articles, but these erudite offenders are the worst of the whole breed of scribblers.

Natural regret is felt that we must give up an impracticable ideal in respect to childhood—the ideal which would leave the child unsullied in his innocence as long as possible, before sex education is begun. We reluctantly are obliged to accept the doctrine that sex education cannot be begun too early. At the same time we are not believers in Freud's teachings regarding the erotic significance of certain hitherto unsuspected phenomena in childhood, even of thumb-sucking in babies. And we do believe in the innocence of childhood—implicitly. But we sadly recognize that if a child is to go safely and sanely through life, sex education must be begun in the kindergarten, one might say. Our children are in a dangerous world, and cannot be brought up like the girl in Lew Wallace's novel, "The Fair God."

Undoubtedly, there are persons of adult age who can look back to a pure childhood, a childhood in which the erotic awakening came very late, because of exceptional circumstances. It has been a natural desire on the part of good men and women to protect and keep inviolate this most beautiful and precious of periods, but this desire has been in entire conflict with the actual conditions which hedge in human life. There should be no walled gardens any longer for the nurturing of cherubims destined for later moral confusion, weakness, or perdition, not to speak of physical harvests. The hot-house plan is criminal, to say the least. We are not in sympathy with the Freudians' overstatements in respect to sexual psychology, and do not think that their exaggerations help the case any. Innocent childhood is being much lied about lately. Nevertheless, there is an imperative necessity for early sex education, for our children live in a suburb of hell.

Movies and dramas of the sort which have flooded New York lately, ostensibly for the purpose of educating the public in respect to social diseases and white slavery, would have no excuse whatever if sex education had been inaugurated at the proper time and applied in the right channels. In other words, we are surfeited with offensive plays and movies because of educational derelictions. The plays and the movies mean simply that certain commercial interests are taking advantage of the necessity for education to offer a coarse and crude brand. And so it will be until we face the necessity in the right way.

One has only to consider the character and personality of the persons commercially engaged in the production of our "educational" amusements to be convinced of the utter sordidness of their motives. One has only to see the plays or movies in question to be convinced that they are artistically indefensible and morally degrading. These deplorable facts ought to quicken realization of the obligations of civilized society to its children. They must receive very early the fullest instruction in matters of sex and grow up neither prudes nor puritans, but enlightened citizens to whom no commercialized sex appeal can be successfully made, constituting, indeed, a community in which productions of the sort discussed in this paragraph will be unthinkable.

"The place seemed new and strange as death,
The white strait bed, with other straits and white,
Like graves dug side by side at measured lengths,
And quiet people walking in and out
With wonderful low voices and soft steps,
And apparitional equal care for each,
Astonished her with order, silence, law:
And when a gentle hand held out a cup,
She took it as you do at sacrament,
Half awed, half melted—not being used, indeed,
To so much love as makes the form of love
And courtesy of manners. Delicate drinks
And rare white bread, to which some dying eyes
Were turned in observation. O my God,
How sick we must be ere we make men just!
I think it frets the saints in heaven to see
How many desolate creatures on the earth
Have learnt the simple dues of fellowship
And social comfort in a hospital!"

—Elizabeth Barrett Browning.

The American Association of Clinical Research

JAMES KRAUSS, M. D., Permanent Secretary and Editor.

FACTS AND PRINCIPLES.

It is well known that in nature everything depends on the action of the law of cause and effect. Without the feeling that every cause will have its certain effect and every effect must have had a certain cause, human knowledge would lose all certainty and scientific progress would lose both the pivot and the axis of trustworthy experience.

Can it be that medicine alone of all sciences should have no principles to guide us through the maze of facts piled up everywhere, by competent and by incompetent hands?

Can it be that medicine alone of all sciences must struggle on empirically, piling facts on facts, questionable facts on unquestionable facts?

We need but clear this forest of questionable and unquestionable facts; we need but have unquestionable facts of medicine and the principles underlying these facts will at once become apparent for the safe and beneficient guidance of scientific practitioners in the treatment of the sick. JAMES KRAUSS, M. D.

COLLOIDS AND THEIR RELATION TO MEDICINE.*

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In 1861, in the Philosophical Transactions of the Royal Society of London, Thomas Graham, Professor of Chemistry and Master of the Mint, published an epoch-making article, entitled, "Liquid Diffusion Applied to Analysis." Graham's definitions and conclusions form the basis of colloidal chemistry, and as it would be difficult to express the subject with greater precision and lucidity, and in order to give to other "seekers for knowledge and searchers after truth" the satisfaction and benefit of first-hand information, it would seem appropriate and desirable to define and describe colloids in Graham's own language as follows:

"The property of volatility possessed in various degrees by so many substances, affords invaluable means of separation as is seen in the ever-recurring processes of evaporation and distillation. So similar in character to volatility is the diffusive power possessed by all liquid substances, that we may fairly reckon upon a class of analogous analytical resources to arise from it. The range also in the degree of diffusive mobility exhibited by different substances appears to be as wide as the scale of vapour tensions. Thus hydrate of potash may be said to possess double the velocity of diffusion of sulphate of potash, and sulphate of potash again double the velocity of sugar, alcohol, and sulphate of magnesia. But the substances named belong all, as regards diffusion, to the more "volatile" class. The comparatively "fixed" class, as regards diffusion, is represented by the different order of chemical substances, marked out by the absence of the power to crystallize, which are slow in the extreme. Among the latter are hydrated silicic acid, hydrated alumina, and other metallic peroxides of the aluminous class, when they exist in the soluble form; with starch, dextrin and the gums, caramel, tannin, albumen, gelatine, vegetable and animal extractive matters.

"Low diffusibility is not the only property which the bodies last enumerated possess in common. They are distinguished by the gelatinous character of their hydrates. Although often largely soluble in water, they are held in solution by a most feeble force. They appear singularly inert to the capacity of acids and bases,

*Read at the fifth annual meeting of the American Association of Clinical Research in Chicago, November 7, 1913.

and in all the ordinary chemical relations. But, on the other hand, their peculiar physical aggregation with the chemical indifference referred to, appears to be required in substances that can intervene in the organic processes of life. The plastic elements of the animal body are found in this class. As gelatin appears to be its type, it is proposed to designate substances of the class as *colloids*, and to speak of their peculiar form of aggregation as the *colloidal condition* of *matter*.. Opposed to the colloidal is the crystalline condition. Substances affecting the latter form will be classed as crystalloids. The distinction is no doubt one of intimate molecular constitution.

"Although chemically inert in the ordinary sense, colloids possess a compensating activity of their own arising out of their physical properties. While the rigidity of the crystalline structure shuts out external impressions, the softness of the gelatinous colloid partakes of fluidity, and enables the colloid to become a medium for liquid diffusion, like water itself. The same penetrability appears to take the form of cementation in such colloids as can exist at a high temperature. Hence a wide sensibility on the part of colloids to external agents. Another and eminently characteristic quality of colloids is their mutability. Their existence is a continued metastasis. A colloid may be compared in this respect to water while existing liquid at a temperature under its usual freezing point, or to a super-saturated saline solution. Fluid colloids appear to have always a pectous* modification and they often pass under the slightest influences from the first into the second condition. The solution of hydrated silicic acid, for instance, is easily obtained in a state of purity, but it cannot be preserved. It may remain fluid for days or weeks in a sealed tube, but is sure to gelatinize and become insoluble at last. The colloid possesses ENERGIA. It may be looked upon as the probable primary source of the force appearing in the phenomena of vitality. To the gradual manner in which colloidal changes take place (for they always demand time as an element) may the characteristic protraction of chemico-organic changes also be referred.

"I may be allowed to advert again to the radical distinction assumed in this paper to exist between colloids and crystalloids in their intimate molecular constitution. Every physical and chemical property is characteristically modified in each class. They appear like different worlds of matter and give occasion to a corresponding division of chemical science. The distinction between these kinds of matter is that subsisting between the material of a mineral and the material of an organized mass.

"The colloidal character is not obliterated by liquefaction, and is therefore more than a modification of the physical condition of solid. Some colloids are soluble in water, as gelatine, and gum-arabic; and some are insoluble, like gum-tragacanth. Some colloids, again, form solid compounds with water, as gelatine and gum-tragacanth, while others, like tannin, do not. In such points the colloids exhibit as great a diversity of property as the crystalloids. A certain parallelism is maintained between the two classes, notwithstanding their differences.

"The phenomena of the solution of a salt or crystalloid probably all appear in the solution of a colloid, but greatly reduced in degree. The process becomes slow; time, indeed, appearing essential to all colloidal changes. The change of temperature, usually occurring in the act of solution, becomes barely perceptible. The liquid is always sensibly gummy or viscous when concentrated. The colloid, although often dissolved in a large proportion by its solvent, is held in solution by a singularly feeble force. Hence colloids are generally displaced and precipitated by the addition to their solution of any substance fro mthe other class. Of all the properties of liquid colloids, their slow diffusion in water, and their arrest by colloidal septa, are the most serviceable in distinguishing them from crystalloids. Colloids have feeble chemical reactions, but they exhibit at the same time a very general sensibility to liquid reagents, as has already been explained. While soluble crystalloids are always highly sapid, soluble colloids are singularly insipid.

"A tendency to spontaneous change, which is observed occasionally in crystalloids, appears to be general in the other class.

"The equivalent of a colloid appears to be always high, although the ratio between the elements of the substances may be simple. Gummic acid, for instance may be represented by $C_{12}H_{11}O$, but judging from the small proportions of lime and potash which suffice to neutralize this acid, the true numbers of its formula must be several times greater. It is difficult to avoid associating the inertness of colloids with their high equivalents, particularly where the high number appears to be attained by the repetition of a smaller number. The inquiry suggests itself whether the colloid molecule may not be constituted by the grouping together of a number of smaller crystalloid molecules, and whether the basis of colloidality may not really be this composite character of the molecule."

Limitations of time and space forbid further quotations from Graham's now classical publication which, strange as it may seem, remained almost completely ignored for 40 years, and only since the birth of the new century began to attract attention and now form the basis of Colloidal Chemistry.

The distinguishing characteristics of colloids and crystalloids as they are known today, many of which were recognized and described by Thomas Graham, may be briefly expressed as follows:

1. The structure of colloids is cellular, plastic. The structure of crystalloids is crystalline, rigid.
2. Colloids diffuse slowly. Crystalloids diffuse rapidly.
3. Colloids are singularly inert in all the ordinary chemical relations. Crystalloids are very active chemically.
4. Colloids possess great mutability. Crystalloids possess great stability.
5. Colloids act gradually. Crystalloids act almost instantaneously.
6. Change of temperature in the act of solution is barely perceptible in the case of colloids. It is very marked in the case of crystalloids.
7. Colloids are held in solution by a most feeble force. Crystalloids are held in solution by a strong force.
8. Solutions of colloids are always sensibly gummy or viscous when concentrated. Solutions of crystalloids are not gummy or viscous, no matter how concentrated.
9. Soluble colloids are singularly insipid. Soluble crystalloids are singularly sapid.
10. The osmotic pressure of colloids in solution is low. The osmotic pressure of crystalloids in solution is high.
11. Colloids lower the freezing point of their solvent little. Crystalloids lower the freezing point of their solvent much.
12. Colloids raise the boiling point of their solvent little. Crystalloids raise the boiling point of their solvent much.

*Curdled. As fibrin, casein, albumen. But certain liquid colloid substances are capable of forming a jelly and yet still remain liquefiable by heat and soluble in water. Such is gelatine itself, which is not pectous in the condition of animal jelly, but may be so as it exists in the gelatiferous tissues.

13. Solutions of colloids coagulate. Solutions of crystalloids crystallize.
14. Solutions of colloids are poor conductors of electricity. Solutions of crystalloids are good conductors of electricity.
15. Colloids are separated from their solvents by the process of filtration and ultra filtration. Crystalloids are not separated from their solvents by the process of filtration.
16. Colloids can be readily separated from their solvent by centrifugal force. Crystalloids require great centrifugal force to separate them from their solvent.
17. Colloid solutions foam when agitated. Crystalloid solutions do not foam when agitated.
18. Colloids scatter and polarize a beam of light. Crystalloids do not scatter and polarize light.
19. Colloids are optically heterogenous, as seen in the Tyndall phenomenon and under the ultra-microscope. Crystalloids are optically homogeneous or empty. They do not produce the Tyndall effect, nor are they visible under the ultra-microscope.
20. The molecular weight of colloids is high. The molecular weight of crystalloids is low.
21. The molecules of colloids are complicated. The molecules of crystalloids are simple.
22. Colloids are porous, therefore have a large surface development and correspondingly large surface energy (power of absorption). Crystalloids are solid, and therefore have a small surface and little surface energy.
23. Colloids possess a strong adhesive power. Crystalloids possess little power of adhesion.
24. Colloids constitute the vast organic world of matter, which comprises the vegetable, animal and human kingdoms, as well as the colloidal portion of the mineral kingdom. The inorganic crystalline portion of the mineral kingdom is composed of crystalloids.
25. The toxicity of colloids is small. The poisonous action of crystalloids is great.
26. The food of the animal and the human is the colloid. The food of the vegetable is the crystalloid.
27. The natural medicine of the animal and human organism is the colloid. The natural medicine of the vegetable organism is the crystalloid.

These distinctions between colloids and crystalloids are not absolute but only relative. They characterize the extremes of the two forms, conditions, or states of matter, and become less and less pronounced as we approach from either side the line of cleavage or of demarcation, the existence of which is still disputed, and many not be demonstrated very soon. Whether we accept the existence of a distinct line of cleavage between the colloid and crystalloid, or the organic world and the inorganic world, we are compelled to admit that the phenomena of what we call vegetable and animal life are inseparably connected with, and dependent upon, the colloidal form of matter, and that matter in crystal-form does not, and cannot serve as a medium for the expressions and manifestations of life. Before a crystalloid can act as a medium for the expression of even the lowest and simplest forms of vegetable life, it must be transformed into a colloid. In other words, it must be raised from the lower form, state, or condition of the inorganic world to the higher form, state, or condition of the organic world.

Because of the wonderful fertility of this vast and most important field in the realm of matter, the activity in this branch of science has been almost feverish within the last decade, and while a vast amount of experimental data have been piled up in this short space of time, the attempts at classification, as for instance into "suspensoids" and "emulsoids," "reversible colloids" and "irreversible colloids," "organic colloids" and "inorganic colloids," have as yet been most unsatisfactory, with the result that the mastery of present-day colloidal chemistry constitutes quite a formidable task to the neophyte. One cause of this chaotic condtion is unquestionably the reluctance of the average scientist to recognize, or to take into account, the great fundamental principle underlying and governing all integration, growth and organization, viz:

"The Organic Principle."

Whatever the *organic principle* may be in essence, we see its manifestation everywhere in the processes of life and evolution in the four kingdoms of Nature. It has been recognized and designated by men of science, the world over, as "The Law of Integration," "The Law of Growth," "The Law of Affinity," "The Law of Evolution," "The Law of Vibration," "The Law of Motion and Number," and "The Constructive Principle of Nature." It governs the evolutionary processes upon our planet. It prepares the mineral kingdom for the manifestations of vegetable life, and the vegetable kingdom for the manifestations of animal life. It transforms, raises, or evolves the crystalloid into the colloid.

The colloid is a more complicated, and higher evolutionary form of matter than the crystalloid and is, therefore, capable of expressing a higher form, and wider range, of Nature's forces, which we are accustomed to summarize as "life."

These undeniable facts suggest a natural subdivision of colloids into *mineral colloids, vegetable colloids* and *animal colloids,* and the author here advocates this natural classification.

The characteristics of colloids here enumerated, at once, and without the need of further elucidation, clearly establish their relation to medicine. If it be true that living organisms, from the simple and single yeast cell, all the way through the vegetable and animal kingdoms, to the human body, the most complex and highest organism known, are colloidal systems, and that their functions are colloidal functions, then it follows with equal certainty that a disturbance of the colloidal equilibrium which we call disease, can be overcome, removed, or cured only by and through colloidal methods, or medicines in colloidal form.

The uses made of colloids in therapeutics are many and varied. The limitations of this paper permit but a brief and incomplete enumeration.

In the use of colloids as antidotes, such as milk, albumen, gelatin, mucilages, oil-emulsions, ferric-oxid ("gel" and "sol")* charcoal, etc., their great power of absorption is utilized.

In dermatology dusting powders, gelatin, collodion, etc., are used to produce a cooling and absorbing effect, which probably is due to their large surface development.

Many disinfectants, such as soaps and their various compounds, are colloidal in character. So are ointments, liniments and plasters.

In balneology the mud-baths are effective because of the great power of absorption of collodial peat or mud.

Colloidal metals, such as silver, gold, mercury, iron, bismuth, arsenic, also colloidal sulphur, and other elements and compounds in colloidal form, have been introduced with more or less success during the last decade.

Experiments with colloidal metals by Fillipe, Henri, Stodel, Ascoli, Izar and others demonstrate that colloidal metals are as powerful in their bactericidal action as their inorganic salts, but very much less poisonous, if at all, in their effects upon ferments like pepsin, trypsin, pancreatin, etc. The effect of colloidal metals upon the enzymes of autolysis or auto-digestion has been found to be accelerating and beneficent. In fact, colloidal metals in themselves possess ferment-action,

*"Sol" is the abbreviation of a colloidal solution. "Gel" is the abbreviation of a gelatinized, or coagulated, colloid. Both terms were suggested by Thomas Graham, and are now in general use in colloidal chemistry.

which can be retarded or entirely annihilated by traces of poisons such as hydrocyanic acid, bichlorid and cyanid of mercury, arsenious acid, carbon monoxid, etc. In other words, colloidal metals can be poisoned like other organized substance.

The ferment action, or catalytic effect, of colloidal metals is very powerful. Bredig found that colloidal platinum still exerted a perceptible decomposing action upon hydrogen peroxide in a dilution of one part of colloidal platinum in 70,000,000 (seventy million) parts of the liquid. Because of their catalytic action Bredig called the colloidal metals "inorganic ferments."

All of our wholesome, natural food is colloidal in its nature. Milk, butter, cheese, eggs, meat, vegetables, fruits, honey, etc., are all colloids, not only their protein, carbohydrate, and fat constituents, but also their mineral bodies. These mineral bodies in colloidal or vito-chemical form, which have been almost totally ignored in medicine and dietetics, appear to be of such vital importance that "not one of the vital processes of the human organism is possible without them."

These facts and deductions are most convincingly corroborated by the results obtained with one of the most recent food-remedies, Biosol, which contains the all-important mineral bodies in vito-chemical form, and which is the result of the application of the facts of colloidal chemistry and biology.

Those who have patiently and attentively followed the author will naturally ask the question: Can crystalloids be transformed into colloids in the laboratory? If so, how? Colloidal chemistry answers: Yes, it can be done. As a matter of fact, every one of the 90 chemical elements, and a large number of their compounds, have been transformed from the crystalline to the colloidal state, and vice-versa. The work accomplished along these lines leaves no doubt that every crystalline, or inorganic, substance can be transformed into a colloidal, or organic substance.

There are many methods by which a crystalloid can be transformed into a colloid. The fundamental principle involved is the reduction of the crystalloid to extreme subdivision in a liquid in which it is almost or completely insoluble. This extreme sub-division can be accomplished by the electric current; by purely mechanical means; by purely chemical methods; or by combinations of such methods.

A simple experiment will demonstrate to you how easy and simple are some transformations of crystalloids into colloids. By adding an almost colorless solution of crystallized ferric chloride to the boiling water in this flask we at once have a blood-red "sol" of colloidal ferric oxide.

Here are sols of gold, silver, mercury, iron, sols and gels of arsenic sulphide, and a sol known as bio-sol, which contains the essential mineral bodies of food and of the human organism.

The experiments which were started at the beginning of this lecture in the different jars and flasks before you, demonstrate in a most beautiful and fascinating manner the transformation of crystaloids into colloids.

The conditions in these experiments make it possible for the constructive principle of nature to effect the transformations in such a manner as to present to the energies, or forces, governing the vegetable kingdom, which are known as "the Vito-Chemical Life Element," an unobstructed field of activity for the production of forms which closely resemble plants, not only morphologically, or in their outward appearance, but also in some physiological functions.

A clearer understanding of colloids and a more intimate knowledge of the facts of colloidal chemistry, and of the vital importance of the colloidal forms of matter for the manifestations of "organic life" and in the elimination of pathologic conditions, will not only accomplish a much needed simplification of materia medica, but also facilitate a rational understanding of the primary causes of disease, and thereby elevate the uncertain art of healing to the glorious heights of an exact science. It would enable the physicians to know why a remedy ought to be colloidal or organic, and why crystalline or inorganic remedies are foreign matter to the human organism and act as poisons and irritants instead of foods.

The possibilities of the application of colloidal chemistry in medicine are suggested not only by some of the colloidal remedies mentioned here, but also by the results obtained by our countryman, Prof. Martin H. Fischer, whose recent publications, "The Oedema" and "Nephritis," are of great value to every thinking and progressive physician.

Those who desire to learn more about colloids will find a wealth of most interesting information in the following publications:

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2. G. Bredig.—Anorganische Fermente. Leipzig, 1901.
3. Arthur Muller.—Allgemeine Chemie der Kolloide. J. A. Barth, Leipzig, 1907.
4. Wo. Pauli.—Physical Chemistry in the service of medicine. Authorized translation by Dr. Martin H. Fischer. J. Wiley & Sons, New York, 1907.
5. L. Michaelis.—Physikalische Chemie der Kolloide in Koranyi-Richter, Physikalische Chemie und Medizin. Leipzig, 1908.
6. B. Szilard.—Beitrage zur allgemeine Kolloidchemie. T. Steinkopf, Dresden, 1908.
7. G. Stodel.—Les Colloides en biologie et en therapeutique. Vigot Freres, Paris, 1908.
8. Richard Zsigmondy.—Colloids and the ultra-microscope; a manual of colloid chemistry and ultramicroscopy. Authorized translation by Jerome Alexander. J. Wiley & Sons, New York, 1909.
9. The Svedberg.—Die Methoden zur Herstellung Kolloider Losungen anorganischer Stoffe. Ein Hand-und Hilfsbuch fur die Chemie und Industrie der Kolloide. T. Steinkopf, Dresden, 1909.
10. R. Ed. Liesegang.—Beitrage zu einer Kolloidchemie des Lebens. T. Steinkopf, Dresden, 1909.
11. H. Freundlich.—Kapillarchemie: eine Darstellung der Chemie der Kolloide und verwandter Gebiete. Akademische Verlagegesellschaft, M. B. H., Leipzig, 1909.
12. Victor Poschl.—An introduction to the chemistry of Colloids. A compendium of colloidal chemistry for students, teachers and works managers. Translated from the second enlarged, German edition by Herbert H. Hodgson. C. Griffin & Co., Ltd., London, 1910.
13. J. M. van Bemmelent.—Die Absorption: Gesammelte Abhandlung Uber Kolloide und Absorption. Mit Unterstutzung des Verfassers neu herausgegeben von Dr. Wo. Ostwald. T. Steinkopf, Dresden, 1910.
14. Paul Rohland.—Der Kolloide und kristalloide Zustand der Materie. F. Lehmann, G. M. B. H., Stuttgart, 1910.
15. Paul Rohland.—The colloidal and crystalloidal state of matter. Translated by W. J. Britland and H. E. Potts. Constable & Co., Ltd., London, 1911.
16. Wo. Ostwald.—Grundries der Kolloidchemie. T. Steinkopf, Dresden, 1911.
17. H. Vechhold.—Die Kolloide in Biologie und Medizin. T. Steinkopf, Dresden, 1912.
18. Martin H. Fischer.—The Oedema, Prize Essay. J. Wiley & Sons, New York, 1910.
19. Martin H. Fischer.—Nephritis, Prize Essay. J. Wiley & Sons, New York, 1912.
20. F. Huntley.—Harmonics of Evolution. Eleventh edition, Chapter VI. Indo-American Book Co., Chicago, 1912.
21. F. Huntley.—The Great Psychological Crime, Part III, Chapters II, III, IX, Eleventh edition. Indo-American Book Co., Chicago, 1912.
22. Hermann Hille.—Facts of Modern Science and their value in the prevention and cure of disease. Medical Record, New York, June 15, 1912.
23. Hermann Hille.—The New Chemistry and the New Materia Medica. Medical Record, New York, Feb. 1, 1913.

ARE FIBROIDS MORE COMMON IN SINGLE AND NULLIPARAE THAN IN MULTIPARAE?*

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In reviewing some of the latest text books in Gynecology, I was surprised by the similar statements in many of them that "Fibroids were more common in single women and nulliparae than in multiparae."

*Read before the Fifth Annual Meeting of the American Association of Clinical Research, at Chicago. November 7, 1913.

I have consulted many gynecologists concerning this statement and, without an exception, each one has said: Most of my cases, in fact, almost all of my cases have been in married women, but you know the Germans say that fibroids occur most frequently in single women. Many theories of etiology need rejuvenating. Most authors were content with the statement that fibroids occur most frequently in single women, without giving theories of etiology. However Veit* teaches that sexual irritation, such as masturbation or abnormal sexual practices, cause fibroids.

If we accept Cohnheim's theory of misplaced foetal tissue, why teach strange doctrines?

Such etiology should not be tolerated by thinking people, much less taught to medical students.

Leopold claims to have found elementary myomata in children. Celibacy has been urged as a cause, but that, too, is absent in the history of the majority of cases.

Heredity has been accredited its usual place. Syphilis has been urged as a possible cause, but the tumors have not responded to the anti-syphilitic treatment, so must be ruled out.

A. Claisse* attributes fibroids to an infection of the uterine mucosa giving rise to subacute inflammation, causing proliferation of the round cells, which become transformed into fibrous tissue and, if this theory be true, at least 50 per cent. of child-bearing women, or plainer still, one-half of the mothers in cities would have fibroids. To prove this, think of the large number of women who show previous pelvic infections. The appearance of subserous, as well as interstitial fibroids, of the varied positions on the fundus or anterior or posterior wall would seemingly preclude this theory. Kelly and Cullen thought that, if physiological hypertrophy of uterine tissue which would normally occur in pregnancy did not take place, a pathological hypertrophy in special areas followed. Does this hold good? The history of pregnancy is present in by far the largest number of women with tumors. Hofmeier maintains that myomatous roots are stimulated to growth by pregnancy, due to increased blood supply.

Only a few authors gave accurate statistics to verify statements and these were of the most general character as, for instance, Bové of Washington says fibroids occur in twenty to thirty per cent. of women reaching thirty-five years. Fifty per cent. of all uterine fibroids are interstitial. Thirty per cent. of all uterine fibroids are subserous. Twenty per cent. of all uterine fibroids are submucous.

Mann* reports sixty-seven per cent. of cases, of which sixteen were single and fifty-one were married, with sixty-four per cent. of the altter sterile.

Benfield of Cincinnati, says: "Fibroids are oftener seen in women who have not borne children, also that sterility predisposes to fibroids and fibroids to sterility."

Mr. Roger Williams on Uterine Tumors, says: "Suppression of maternity is the most important factor in the genesis of these tumors."

Ashton says: "Fibroids are more frequently observed in single and sterile women than in those who have borne children, and in colore dthan in the white race."

Martin and Jung of Berlin, say: "Fibroids are more frequent in single women, especially in teachers."

Ashton says: "Fibroids are more frequently observed in single and sterile women than in those who have borne children."

My statistics are gathered from a general clinic of 5,600 cases composed of the middle class of people of American, German, Italian, Polish and Bohemian descent. Out of these 5,600 cases there were 104 fibroids. One hundred were married. Four were single. Fourteen fibroids were multinodular. Seven were in the fundus. Five were itnhe anterior and five were in the posterior body of the uterus. One was in the cervix. Seventy-two were intramural. One had a tumor in both breasts, probably carcinoma. One had a cyst in the wall of the vagina.

Of the one hundred married women eighteen had no children and no miscarriages.

Fourteen of the hundred had no children and one miscarriage. One had no children and five miscarriages, which would lead us to suspect other causes than the fibroid for the miscarriages.

Sixty-seven of the hundred bore 261 children and had eighty miscarriages, (therefore 67 had the proportion of 3 60/67 living children and 1 13/67 miscarriages apiece).

The largest number of children to any one person was eleven.

Eighty-nine had more pain and suffered more at menstruation since their miscarriage or full term labors than before pregnancy supervened. Six were just the same. Five had less pain at menstruation than they had before.

These statistics would certainly lead us to reject the old theory that child birth is a panacea for all menstrual ills and conclude that only with the greatest care during pregnancy and delivery can we expect as good a condition as before labor.

Did the eighteen fibroids arise because of a nulliparous condition or were the eighteen nulliparae due to fibroids, or other causes? Barring venereal diseases in the male and female and various infectious processes in the female of the eighteen who never conceived, only two uteri were freely movable. All others being in a state of limited motion or fixed, showing that there had been previously a severe inflammatory condition with pathological changes, therefore would it not be more reasonable to assume that sterility was due to previous infections rather than the tumor, and the already implanted tumor aggravated to growth by pregnancy, by increased blood supply, and by infections?

Seven of the nulliparae had fibroids with uteri antiflexed. Nine had retroversion or flexion.

I believe the sterility in the nulliparous married women was due rather to the displacement and former infections with resulting endometritis, myometritis and salpingitis, with change of secretions from alkaline to acid and by too abundant secretions, inflammations and increased menstrual flow, rather than to the fibroids, and the fibroids were to be explained by the Cohnheim theory.

The fibroids did happen to occur in eighteen nulliparae, but these might have been multiparae save for the above named causes.

Of the fourteen who had no children and one miscarriage, four uteri were antiflexed, eight uteri were in anteposition, two were in retroposition, eight uteri were fixed by chronic adhesions or by recurrent inflammations, while four were mobile.

Gonococci were easily demonstrated in the secretions of five. The youngest woman of the entire number was twenty and had multiple fibroids. The oldest was sixty-six. Their average age was thirty-eight. The sixty-

*Veit, Handbuch der Gynäkologie, 1897, Vol. 2, p. 452.
*Claisse, A., Thèse de Paris, 1900.
*Mann, Am. Journ. Obst., June, 1907.

seven with fibroids conceived a little bette rthan five times each. Other women of the same series, but without fibroids, conceived three times each. Many of the fibroid cases had organic heart lesions. Of one hundred, twenty-six women not in the previous series, but advanced cases referred for operations, twenty-two were mothers. One was sterile. Three were single.

I believe, with Hofmeier, that myomata facilitate instead of prevent conception, and these statistics show fibroids more frequent in multiparae than in nulliparae or single women.

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Discussion of the Papers of Drs. Wilson and Hille.

Dr. Bailey, Chicago: I have just a word in commendation of these two papers. The proper understanding and consideration of the constituent elements of the body are neglected. In the Washington Museum the Government exhibits in a case the constituent minerals and fluid particles of the human body and in animals in their correct proportions as found after years and years of observation and research. It is a permanent exhibit and gives a permanent answer to the question of the value of minerals.

Dr. Gibson, Denver: The subject of Dr. Wilson is exceedingly interesting to me. Only in the last two or three weeks I examined the saliva of thirty tubercular patients, and to my great surprise I found in about twenty-four acid reaction. Of course I put them on alkalies at once, and immediately noticed some very nice changes.

Dr. Hille, Chicago: You witness before your eyes the transformation of inorganic crystalline substance into organic colloidal substance. I merely inserted a few pieces of fused calcium chloride, and crystals of copper sulphate, etc., inorganic crystalline substances, into crystalloid solutions of sodium, potassium, silica, etc., and you already see the beginning of what resembles a vegetable growth. Stephen Leduc and other Frenchmen have made experiments such as these, but were not recognized by the French Academy of Science. I intended to demonstrate these colloidal phenomena under the ultra-microscope, but the outfit has not arrived and I hope to make the microscopic demonstration next year. Professor Bechthold's book on Colloids in Biology and Medicine is especially written for physicians and clearly presents a large portion of colloidal chemistry and of colloids as a whole.

Dr. Krauss, Boston: I should like to ask Dr. Hille how he explains the non-dialyzable property of colloids in respect to medication. We know that crystalloids pass through porous membranes like the intestinal walls readily. How about colloids, which hitherto we have been told do not pass readily through porous membranes?

Dr. Hille, Chicago: Some say colloids do not dialyze through membranes, crystalloids do. That is not scientifically correct. Colloids dialyze, only very much more slowly than crystalloids; are completely soluble in the surrounding medium and after dialysis again become gelatinous, or pectous, as Graham calls it. We see that every day in the plant. When the sun shines, in every cell of every green leaf carbonic acid and water are transformed into starch, which is deposited in the form of insoluble globules in the cells in the chlorophyll corpuscles. After the sun goes down another process takes place. The starch which had been deposited during the day is transformed into sugar, into a soluble form of carbohydrate, and diffuses by osmosis through the membranes and the whole plant. In the potato plant it goes from the leaves above ground to the bulbs under ground, where again it is retransformed into insoluble starch and deposited there for future use.

Dr. Krauss, Boston: Colloidal foods, like milk, are not absorbed as colloids. They are first decomposed in the process of digestion. The question must be asked of Dr. Hille: Do medical colloids first decompose into crystalloids before they are absorbed, or are they absorbed as colloids? Mineral matter generally passes through the system unaltered. Protein foods go to the making of animal tissues and are eliminated in the form of nitrogenous, aromatic and fatty bodies. Carbohydrates produce heat and energy, and are eliminated in the form of carbon dioxide and water. Fat also is eliminated in the form of carbon dioxide and water. Inorganic matter, however, is eliminated as inorganic matter. The inorganic matter, water and mineral substances, we have learned to appreciate as mechanic and dynamic aids of metabolism, necessary for sensitizing the nervous system. I should like to know how Dr. Hille conceives that the colloids are broken up in the system and if the colloids are broken up before absorption, as we are led to expect that they are by the teachings of physiologic chemistry, where the advantage is of introducing colloids as medicines over crystalloids. I am very much interested in this subject. If Dr. Hille can substantiate the proposition that the colloidal state is a transitional state from the inorganic to the organic world, he will accomplish a great thing. A point must not be overlooked. It is very hazardous to make inferences even from the best established particular facts.

Dr. Wilson's reference to demineralization of food as predisposing factor of disease brings to mind the fact that in certain quarters demineralization of wheat foods has been taken as the cause of cancer. We overlook the fact that we obtain minerals with other foods than wheat foods. Certain men accuse the eating of too much flesh food as the cause of cancer. Hindoos suffer from cancer and they use mostly mineral-retained wheat foods and do not use much, if any, meat. We must not jump at conclusions. Minerals stimulate nerve action, are necessary as mechanic and dynamic aids in metabolism, should be conserved more or less completely with our foods, but we must not jump at conclusions. I think Dr. Hille's work is one of great importance. It is in line with the work of some able experimental pharmacologists, like Professor Loewe of Graz, who rightly take the position that medicine has not much to gain in the present flights of immunology, but that the study of the colloids gives greater promise. I believe that we have to look to the constitution of medicines, be they colloids, crystalloids or what else, to the constitution of the cell as the unit of the body, to the discernible effects of cellular reaction obtained in a consistent study of drug experiments on the living human body for a true science of pharmacotherapeutics.

Dr. Gibson, Denver: I should like to ask Dr. Hille as to the chemistry of biosol.

Dr. Askenstedt, Louisville: Dr. Hille has referred to Dr. Fischer's work on anæmia. I should like to ask Dr. Hille if he accepts Dr. Fischer's theory that albuminuria in whatsoever form is due to hypoacidity of the kidney substance dissolving the tissue cells? My own experience does not seem to confirm this view. I should also like to ask Dr. Hille if he accepts Dr. Fischer's view that transfusion and osmosis are known by all the functions of the various cells of the body or whether he recognizes the necessity of the biological factor also coming in that converts the substance that is in the surrounding fluids to a different substance for secretion.

Dr. Hille (concluding): I am absolutely convinced that we absorb colloids as colloids. We retain so-called organic matter or organized matter as well as salts, and we discharge broken-down organized matter as well as salts. The large molecules of proteins, carbohydrates and fats are deposited in the organism when there is a lack of mineral bodies and autointoxication results. The animal and human organism cannot transform crystalloids into colloids. The vegetable organism can. Colloidal metals produce bactericidal effects without destroying tissue because they are not foreign matter to the system any longer as crystalloids necessarily are. Minerals are more than mere stimulants. Mineral bodies are the agents without which the vital processes are impossible. Professors Albu and Neuberg of Berlin have gathered all the data on this subject up to 1906. They have also come to this conclusion. In the silver preparation argyrol, which I made after I first came to this country, the colloidal form of silver is responsible for its success with the medical profession. In biosol we rely upon the selective power of the organism. All the mineral bodies that the system needs are supplied in such form that the system can utilize them. I mentioned Professor Fischer's two works because they are some of the first attainments in medicine along colloidal lines. I did not mean to convey by that that I either approve or disapprove of his conclusions. The work is exemplary because it follows the right lines. Colloidal chemistry should be taken up much more by the medical profession. We should be careful in our conclusions, but we should not go to the other extreme and become so careful as to avoid and evade conclusions on the most vital subjects.

Discussion of Dr. Conklin's Paper.

Dr. Bailey, Chicago: I wish I could satisfy my own mind and the minds of others in regard to the real cause of myomata. I had the fortune to be a student of Apostoli and I am sorry that the world has grown away from Apostoli's method of treatment. In my investigations several years ago I found the statement of a pathologist with a large post-mortem experience that he always found the beginning of a fibroid in every uterus he examined; that the first appearance of a myoma was as the finest kind of a piece of thread that was displaced—a little displacement of a blood vessel, giving a different phase to nutrition in the area in which it was located.

Dr. Gibson, Denver: I was with Apostoli at the time of his death. The reason why his valuable statistics were not pub-

lished was that he died very suddenly. In the South the majority of fibroids is found in the colored people. It is only rarely that fibroids are found there in the better class of white women. Apostoli thought that fibroids occurred more in women that are hard worked. I had an idea that they occurred mostly in nulliparæ. I expect that the statistics of Dr. Conklin are about right. I got considerable results from treating fibroids with the *x*-ray before I came to Denver and I paid more attention to the *x*-ray treatment of tuberculosis. I think one of the greatest fields that is open for radiotherapists today is the fibroid work, and being the first man that ever reported a case of fibroid treated by the *x*-ray—I reported the case before the American Electrotherapeutic Association in 1902 and the case is recorded in Snow's work on electricity and in the transactions of the Association—I am naturally pleased.

Dr. Krauss, Boston: I should like to ask Dr. Conklin whether she has considered the question of uterine fibroids from the point of self-imposed or factitious sterility and from the point of suppressed internal secretion of some gland. Benign growths result from a multiplication of cells within their normal habitat. Self-imposed, factitious sterility, though not necessarily meaning abortion or great violence, represents nevertheless a violence to the soma with increased vascularizaiton, and increased vascularization is really the first step in the multiplication of cells representing benign or malignant tumors.

Dr. Allen, Baroda: Fibroids appear to be very rare in India. Out of five hundred women I examined I found only two fibroids. Age is difficult to determine in India. If you ask, "How old are you?" the answer comes, "Who knows?" I estimated the age of one to be about thirty, and from the history of the other I judged that she was between forty-five and fifty. They were not mothers, but women living in seclusion—one even wealthy. The working women seem to be more free from disease and trouble than the women who do not work hard.

Dr. Leavitt, Chicago: The Apostoli treatment did produce satisfactory results in controlling hemorrhage, but I never saw a fibroid reduced in size as the result of the treatment. I am opposed to the early operation of uterine fibroids because many times by non-operative measures the development, at any rate, may be held in check. As to the question of self-imposed sterility, I feel very sure that where in a woman of temperament there is lack of functional sexual activity there is a predisposition to the development of uterine fibroid. It has been my observation that fibroids are far more likely to occur in old maids and in women who, even if married, have not had children or have had perhaps only one and then their sexual life has been interfered with. I have also observed that full-term pregnancy arrests the development of uterine fibroids.

Dr. Smith, Detroit: I think every tumor, however benign, should be operated on. Benign tumors tend to become malignant. The mortality rate is low, and the time is coming when all fibroids will be operated.

Dr. Conklin, Chicago (in conclusion): I have found mothers mostly that have had fibroids. One of my associates has done considerable work on the question of internal secretions in relation to fibroids, but has not come to any definite conclusion. My idea was not to touch on the subject of treatment. I have no faith in theoretical treatments, such as the injection of tuberculin into fibroids practiced in this city, and other indefinite treatments.

For a Misty Wind Shield.

Smear some of the following solution on a wet windshield with gauze, making a thin layer:

℞ Sodium chloridi, ʒj. (3.90)
Water, ʒj. (30.0)
Glycerin, ʒij. (60.0)

Wipe in a downward direction. This is a boon on a wet night.—(*Brit. Med. Jour.*)

Appendicitis in Children.

Simpson, in a study of 30 cases, observes that in 29 severe abdominal pain was an early symptom. Vomiting occurred in 25, constipation in 10, diarrhea in 6. Fever was present at the outset in only 28. Marked tenderness and rigidity over the right iliac fossa were present in 28 cases. Diminished mobility of some part of the abdomen in respiration was marked in 20, and abdominal distension was present in 6.—(*Brit. Jour. Child. Dis.*, No. 9, 1913.)

Special Article

Radium Therapy and the Modified X-Ray in Cancer.

Great interest in the treatment of cancer by the use of radium has been aroused in this country, primarily through the clinical experiences of Drs. Robert Abbe, of St. Luke's Hospital, New York, and Howard A. Kelly, of Johns Hopkins Hospital, Baltimore. The press has been filled with articles showing the progress made in radium therapy, as well as the efforts of philanthropists to conserve the visible supply of the mineral for the use of the people. Fortunately the Government, acting through its Bureau of Mines, has taken a hand in the matter, and from present indications the control of the radium industry will be in the hands of Government officials. Dr. Howard A. Kelly, professor of gynecology in Johns Hopkins Medical-School, has been very active in investigating the therapeutic effects of radium in the treatment of cancer.

Dr. Kelly on Radium.

In an interview with a correspondent of THE MEDICAL TIMES early in January, Dr. Kelly said:

"Our idea is to obtain the utmost general publicity on the premonitory signs of cancer. We particularly seek to inform women of the early symptoms of those particular forms of which they are the victims. We did this because our statistics (especially those prepared by our surgical pathologist, Bloodgood) show that, if discovered in the early days, an enormous percentage of permanent recoveries can be secured by operation.

"In fact, medical science has taught for years, and still teaches, that there is but one way to treat cancer, in its advanced stages, and that is by the knife. This treatment, as a matter of practice, still holds perfectly good. Radium is a precious handmaid to surgery; it does not supersede it. Even if radium would cure all cases readily—and this remains to be demonstrated—we could not yet realize the new remedy on the large scale, owing to the extreme scarcity of the element.

"This situation is aggravated by the fact that Dr. Burnam and I believe that it is only radium in comparatively large quantities that accomplishes the most satisfactory results. Radium gives off rays of three kinds, named alpha, beta, and gamma. Domenci and Wickham taught us that it is the gamma rays of radium which have a remarkably disintegrating effect upon tumor tissue.

"These rays affect all kinds of tissue, both that which is normal and that which is diseased. In large quantities the gamma rays make healthy skin turn red and blister. Those who handle it usually bear evidences of the fact in sore fingers. Under careful use there is no such thing as a radium burn in any way comparable to an x-ray burn, of which there is such a universal dread.

"These rays, however, affect non-cancerous and cancerous tissue very differently. In small quantities the gamma rays of radium penetrate good, healthy, normal tissue without producing any noticeable effect. The same rays, however, and in the same amounts, do exercise a beneficial effect upon diseased tissue, such as that affected by cancer. Brought to bear upon a particular area, part of which consists of normal cells and a part of tumor cells, the effect is soon apparent. The normal cells remain practically unchanged. The tumor cells show fundamental alterations. They swell, lose their characteristic appearance, break down, and are

absorbed. Sometimes they seem to melt back into the normal tissue.

"Now, the radium treatment accomplishes about the same thing as the surgeon's knife. The knife gets rid of the cancerous tissue by cutting it out en masse; the radium gets rid of it by destroying it cell by cell. In other words, at the present stage of development, radium acts most successfully on the kind of tumors that surgery most easily destroys. These are superficial tumors—of the skin, face, jaw, tongue, and the like. They are the tumors which are on the outside of the body, which we can see and handle. In many such cases, radium, according to our experience, seems to be an actual cure. We have had success extending over many months in a considerable number of cases.

"At first it might seem, since surgery is already quite effective in cancers of this kind, that we have gained nothing. But it is an immense gain. The surgical removal of tumors of the face, for example, involves disfigurement. If one has a cancer on the nose, the only thing to do is to cut off the nose; other affections also involve the removal of an eye, the jaw, the tongue, a lip or the chin. When radium destroys such tumors —as it does in many cases—the face is restored virtually to its normal condition. When the growth has widely infiltrated surrounding structures, the surgeon is ofen helpless. After removing the primary growth, however, he can irradiate these tissues and so have a greater chance of removing any stray cells that may be left. Radium, I believe, can thus be used to make doubly sure all ordinary operations for cancer. Another important point in considering the usefulness of radium in superficial tumors is that it does not involve the suffering of a surgical operation, being practically painless.

"Perhaps radium's greatest triumph is in treating a particularly distressing and difficult form of cancer—that of the uterus. This and cancer of the breast are the commoner forms in which cancer chiefly attacks women, just as men suffer more from cancer of the stomach. Early operation with the knife cures this in a good many cases, but the operation is a radical one, and is not free from danger. Radium is extremely valuable in cases of this kind.

"There are other skin affections, not cancerous in their nature, in which radium is a blessing. These are the vascular tumors, birth marks, 'port-wine' stains. Dr. L. Wickham, of the St. Louis Hospital, Paris, has had many remarkable successes, having treated more than a thousand cases in the last seven years. It looks as though, for disfigurements of this kind where surgery is often powerless, radium may be practically a specific. It does not produce inflammation or pain, an important consideration, especially as children are often patients.

"Scars, too, are often entirely removed, leaving the face practically normal. The emanation of radium—a gas given off by radium,—is used dissolved in water or alcohol, for internal administration, and is being tested out in cases of gout, rheumatism, arterio-sclerosis, and the neuralgias, as well as in certain blood diseases and anemias. Radium does not necessitate the use of an anesthetic, and its administration causes no pain and almost no discomfort. The radium salt is kept inclosed in a fine platinum tube about an inch long. This tube is again encased with lead, which is used because it acts as a filter, keeping in the alpha and beta rays—which are more destructive to normal tissue—while letting the gamma rays slip through.

"The tube, further covered with some soft substance, is then laid in immediate proximity to the diseased part; if necessary, it can be attached by surgical plaster; in some cases incisions into the diseased part may be made. Its action upon the cancerous tissues begins at once; the application lasts from 4 to 6 to 24 hours. Sometimes in a month or six weeks the growth vanishes. The radium so used can be used over and over again.

"Most readers are now familiar with the much-heralded 'miracle of radium,' the mysterious substance that apparently defies all the known laws of the material universe, in that it keeps giving off matter without diminishing its own bulk. Every little particle of radium has been giving off its rays for thousands of years, and will continue to be active for two thousand years longer, when it will have just half its present weight, but will be just as able to throw out its rays as it is now, only in lessened amount, so that the small amount of radium now in use may be inherited by generation after generation of enterprising surgeons.

"However, what about the practical question: Supposing radium does cure cancer, how widespread will be its use?

"The newspapers have familiarized the public with the fact that there are extremely small amounts in existence. With a grain of radium one can do much, but the sufferers from cancer are fearfully numerous; half as many people in New York State die from this disease as from tuberculosis. Manifestly, even though radium were an absolute cure for all cases, the mortality rates would change very little, as so few people could gain access to it.

"Is this treatment, then, to remain a luxury for the few, presumably the rich? We hear much of a 'radium trust,' of a few people getting all of the precious element into their own hands. The value of all the radium which has been taken from the earth is from $2,000,000 to $3,000,000, so that one of our New York or Chicago millionaires might easily buy it all.

"The larger amount of this precious substance now in European laboratories and hospitals has come from the United States. The small quantities now held by American scientists they have been obliged to buy back at high prices from Europe. At present there is only one firm engaged in this country in extracting and refining radium, and this firm has not yet entered the radium market.

"Austria, France, Germany and England have established radium institutes, the purpose of which is to study the effects of the mineral, and to conserve the supply. A national Radium Institute has been formed in our country, and it is expected that, as a result of its efforts, the United States will show more interest in developing its radium resources.

"It is also the purpose of the Institute to acquire radium to test out all its possibilities in relieving disease, especially cancer.

"In the new radium science America should take the lead from now on, not only because it has especially competent experimenters, but because it has the one indispensable thing that other nations do not possess—a comparatively large supply of radium in its own mines."

After M. and Mme. Curie made their wonderful discovery, the world eventually awoke to the fact that in that Paris laboratory had been created a new means of treatment that inaugurated a new era in the eradication of cancer, which has claimed its victims in spite of efforts of the world's leaders in medicine and surgery.

The Death Rate From Cancer.

In speaking of cancer, Dr. Park writes:

"Cancer is the medical sphinx of the ages, which looms up before us as does the great sphinx at Ghizah, the great, frowning interrogation point of interest to the student, alike of the history of medicine and of the hidden causes of disease. There is no more important subject before the medical profession today than this one of cancer. Is it really on the increase, as so frequently stated, or are the profession and the public alarmed?

"During the five years, 1900-1904, inclusive, there occurred in the then smaller Registration Area, with a population of 28,807,269, a total of 106,119 deaths from cancer giving an average annual death rate of 66.6 per 100,000 of population.

"From this rate of 66.6 at the end of 1904 it rose as follows: In 195 it was 72.1; in 1906 it was 70.8; in 1907 it was 73.1; in 1908 it was 74.3; in 1909 it was 73.8; in 1910 it was 76.2. During this last year (1910) the total number of deaths from cancer in the Registration Area was 41,039. Moreover, the death rate of 76.2, of 1910, was the highest ever recorded up to that time in this country.

"Contrast that figure of 76.2 with the rate of 63, which was the figure in 1900, and of 70, which was the rate for 1904. Or tabulated, we have these figures: Annual death rate, per 100,000, for 1900, 63; annual death rate, per 100,000, for 1904, 70; annual death rate, per 100,000, for 1910, 76.2. During this period, from 1887 up to 1913, there has been no corresponding increase in population. Here, then, we are confronted by an enormous increase in the prevalence of this disease, explainable in only one way, viz., that the disease is alarmingly on the increase."

The Source of Radium.

Until recently only Europe had treated the ore which is the source of the radium which has been found. The skill and daring of heroic American explorers has lately made known the existence of radium-bearing mineral in deserts and unknown regions of some of our Western States. Here is how those heroes of science describe what they have learned:

"American carnotite is found chiefly in Montrose and San Miguel Counties, Colorado, and in Utah. The richest of all American carnotite localities and, indeed, the richest known radium-bearing region in the world, is that of the Paradox Valley, extending from Hydraulic on the north to the McIntyre district on the south, —all absolute desert.

"Geologists are now in the field making a special study of these carnotite ores with special reference to their occurrence and origin, of which altogether too little is now known. In the Paradox region, the deposits seem to lie invariably just above the fine-grained La Plata sandstone. This rock is usually exposed high on the sides of the canyons. In a few instances the deposits are only a few feet under the surface, the higher formations having been eroded; but for the main part, the stratum in which the carnotite occurs, when not entirely eroded, is deep below the surface of the mess. Accordingly prospecting is mainly carried on along the sides of the canyons, and where vanadium and uranium stains are seen upon the rock the prospectors blast out tunnels to determine the extent of the pockets that are underneath the surface.

"Radium is found with uranium minerals only, and where there is no uranium, radium has never been found. Uranium and therefore radium are held in this country in carnotite and its associated minerals, and in pitchblende. Carnotite is a lemon-yellow mineral, usually found in pockets of sandstone deposits. The mineral may be in the form of light yellow specks disseminated through the sandstone, or as yellow incrustations in the cracks of the sandstone, or may be more or less massive, associated with blue, black, or brown vanadium ores.

"Pitchblende is a hard, blue-black ore that looks something like magnetite, but is heavier. It is found in pockets and veins in igneous rocks. This mineral is not nearly as widely distributed as carnotite. Occasionally it is associated with an orange mineral called gummite.

"Here is the curious way in which the tiny particles of metal far more precious than gold or diamonds, are discovered: A photographic plate is wrapped in the dark, in two thicknesses of black paper. On the paper rests a key and then, just above the key is suspended two or three ounces of the ore, the whole placed in a light-tight box. After three or four days, the plate is developed and if the ore is appreciably radio-active, an image of the key will be found on the plate.

"There is prospect that most of the low-grade ores can be successfully concentrated by mechanical methods and experiments at the Denver office of the Bureau of Mines, indicate that a concentration of four to one can be obtained. In the working up of radium-containing materials the first operation is usually effected by boiling with sodium carbonate solution, filtering and washing free from sulphate. Naturally the greater the excess of sodium carbonate, the larger the proportion of insoluble sulphate converted into carbonate.

"The carbonates, washed free from the sulphates, are treated with pure hydrochloric acid, which disssolves the alkaline-earths, including radium. From the solution, the radium may be extracted by sulphuric acid and reconverted back into carbonates as before, or sometimes more conveniently they may be made into chlorides by saturating the solution with hydrogen chlorid. This is a method of great utility in the laboratory, for the most probable imprities, chlorids of lead, iron, calcium, etc., remain in solution and only the barium and radium chlorid are precipitated, practically in the pure state. Radium chlorid and radium bromid are paid for on the basis of the metallic radium they contain. The price of $120 per gram of the metal is equivalent to approximately $91,000 per gram of radium chlorid, or $70,000 per gram of radium bromid.

"There is no question that there is to be an increased radium production, but the uses of and demand for radium are apparently developing at an even greater rate. Although, until recently, the manufacture of radium, from carnotite, has been carried on almost wholly in France and Germany, there appears to be no good reason why our American carnotite should not be treated at home. Carnotite is much more easily treated than pitchblende and the essential features of methods for its chemical treatment are well known, although much of the mechanical detail of operation has been kept secret. There seems to be no good reason why any of our carnotite ores should not be shipped abroad.

"It is highly important that the medical profession should also have some guarantee of the material they purchase, even if it is purchased in small quantities. As several frauds in the sale of radium have already been perpetrated upon American physicians, they should all require that the quality of the material purchased should be certified under conditions which prevent error.

"A co-operative agreement has been entered into

(*Continued on p.* 20.)

Mer-XX

A Mercurial Treatment For Syphilis.

Mer-XX

Twenty Doses By The Mouth.

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Administered in Twenty Days.

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Information to Physicians on request.

(*Continued from p.* 64.)

with the newly organized National Radium Instiute, whereby the Bureau of Mines obtains the opportunity of a scientific and technological study of the mining and concentrating of carnotite ores and of the most efficient methods of obtaining radium, vanadium, and uranium therefrom, with a view to increased efficiency of production and the prevention of waste.

"The Institute obtained the right to mine 27 claims in the Paradox Valley region, among which are some of the best mines in this richest radium-bearing region of the world. Nearly 100 tons of high-grade carnotite have already been produced. Under the agreement with the Bureau of Mines, the technical operations of the mines and mill are to be guided by the scientific staff of the Bureau. Work will begin in an experimental plant to be erected in Colorado.

"The Institute has been formed for the special purpose of procuring enough radium to conduct extensive experiments in radium therapy with special reference to the curing of cancer. It also expects to carry on investigations regarding the physical characteristics and chemical effects of radium rays and hopes in time to be able to assist or perhaps even duplicate the effects of these rays by physical means."

Modified X-Ray Treatment.

Surgeon John F. Anderson, U. S. P. H. S., director of the United States Hygienic Laboratory, advocates modified *x*-ray treatment as a substitute for radium in the treatment of cancer, according to reliable statements. He says:

"Radium will never cure more than a fraction of the cancer cases, nor relieve more than the most pitiful percentage of sufferers, while the use of the modified *x*-rays may be applied to every case. There would never be a sufficient supply of radium to meet all demands, but any hospital could equip its machines with the new device, making almost as efficacious a treatment as radium."

A well-known authority remarks:

"Radium will always have its place in every laboratory and hospital that can afford it. But when one considers how expensive it is one can readily imagine how much more universally the modified *x*-ray will be used. This new ray is not in a strict interpretation of the word new. It is the old ray many times intensified and so perfected that it can be applied with ease, and applied, too, to any part of the body.

"The ray has been developed to the highest point of intensity and perfection, and that must suffice. The time is not far distant when the world will know all about it. There is no doubt about its healing properties, and physicians who have examined the new device regard it as a most important and far reaching discovery."

The Physician's Library

A Text-Book of the Practice of Medicine. By James M. Anders, M. D., Ph. D., LL. D., Professor of Medicine and Clinical Medicine, Medico-Chirurgical College, Philadelphia. Eleventh Edition Thoroughly Revised. Cloth. 1335 pages, fully illustrated. Price $5.50 net; half morocco, $7.00 net. Philadelphia and London: W. B. Saunders Company, 1913.

This book is so widely used that a critical review of a new edition is unnecessary. As might be expected the eleventh revision has been brought fully abreast of the times. Among the many additions to the edition which appeared in 1911 are those connected with typhoid fever, including McPhedran's sign of peritonitis, Burke's reflex sign, Prendergast's test and phlebotomy and transfusion for hemorrhage. These signs are explained: Lee's in acute articular rheumatism, Pastia's in scarlet fever, Schepelmann's in acute plastic pleurisy, and Stern's in tricuspid incompetency. Among other discussions are salvarsan and sodium cacodylate in pernicious anemia, atophan and radium emanations in gout, benzol in leukemia, vaccine in goiter, hexamethylenamine in acute bronchitis, artificial pneumo-thorax in hemoptysis, oxygen in sero-fibrinous pleurisy and electricity in arterial sclerosis. New subjects include Lanes kink of the ileum, parathyroid diseases, streptococcic tonsillitis, and status thymico-lymphaticus.

The text book lays particular emphasis on treatment, taking up the subject more thoroughly than many similar works.

The History of Medicine, with Medical Chronology, Bibliographia Data, and Test Questions. By Fielding H. Garrison, M. D., Principal Assistant Librarian, Surgeon General's Office, Washington, D. C.; Editor of the "Index Medicus." Cloth. 677 pages, many portraits. Price $6 net; half morocco, $7.50 net. Philadelphia and London: W. B. Saunders Company.

The desire of the able author of this volume to be an interpreter and expositor of the history of medicine rather than an authority has been admirably carried out. While in no sense may we consider this in the class with Neuberger, the author has compiled a vast amount of useful and interesting information. We liken it, if we may be permited, to Baedeker, that helpful book, which enables us to understand the better the more comprehensive works of the old world historians.

The book is a general survey of the history of medicine from the days of Egyptian medicine through the Greek, Byzantine, Mohammedan, and Medieval periods to the present, lightly touching upon the most important events throughout this long stretch of time. About half the space is devoted to the nineteenth and twentieth centuries. There are in addition valuable appendices. Certain important factors in medicine's progress, as, for example, medical journalism, are almost too tritely handled, but on the whole, the subject is admirably covered.

Genito-Urinary Diseases and Syphilis. By Edgar G. Ballenger, M. D., Adjunct Clinical Professor of Genito-Urinary Diseases, Atlanta Medical College; Urologist to Westley Memorial Hospital, etc., assisted by Omar F. Fielder, M. D. The Wassermann Reaction by Edgar Paullin, M. D. Second Edition Revised. 527 pages with 109 illustrations and 5 colored plates. Price $5 net. Atlanta: E. W. Allen & Co., 1913.

This book is written as the result of long experience in urology and it is characterized by common sense views on the subjects at hand. The author has gone into matters thoroughly, but without unnecessary elaboration. One of the most interesting features is the method of aborting gonorrhea when seen early. Twenty-five minims of argyrol are injected into the anterior urethra, sealed in with collodion and allowed to remain six hours. Ballinger has used this method in over 700 cases with excellent abortive results.

In administering salvarsan and neolsalvarsan he cocanizes the skin over the site of the injection, to us a somewhat needless procedure. The book contains many

(*Continued on p.* 22.)

A Powerful, Nutritive Tonic

The notable advances that have been made in our knowledge concerning human metabolism and physiologic chemistry in general have emphasized the great importance of certain enzymes and nutrients in the maintenance of nutritional processes at their highest efficiency.

As facts have accumulated and the almost specific utility of diastase and carefully selected carbohydrates in the management of many forms of malnutrition has been conclusively demonstrated, the use of malt extract has rapidly extended. Indeed, a malt extract of the purity and quality of

TROMMER
Diastasic Malt Extract

accomplishes results that make it one of the most useful measures that can be employed in the wide variety of human ailments characterized by nutritional decline such as **incipient tuberculosis, diabetes, starch indigestion, neurasthenia, convalescence and various other forms of debility.**

Made from carefully selected barley, this time tried product is remarkably rich in natural diastase, maltose and other nutrient extractives. Administered in appropriate dosage, it not only aids the digestion of starches, but gives a marked impetus to nutritional processes in general, with a corresponding increase of bodily strength and vitality.

For over forty years Trommer Malt Extract has been serving the profession, and experience has proven it to be one of the most effective and dependable reconstructives at the command of the skilled therapeutist.

THE TROMMER CO., - Fremont, Ohio

Cystogen

$C_6H_{12}N_4$

A preferred product of hexamethylene tetramine remarkably free from irritating properties.

PHYSIOLOGICAL ACTION

Genito-urinary antiseptic and uric-acid solvent in doses of gr., V-X t. i. d.; increases the excretion of urine and of uric-acid. It causes the urine to become a dilute solution of formaldehyde with antiseptic properties. Specially valuable as a diuretic and urinary-antiseptic in cystitis, pyelitis, phosphaturia, before surgical operation on the urinary tract; during the course of infectious diseases to prevent nephritis; and as a solvent and eliminant in rheumatism and gout.

When given in large doses, gr. X to XV, four times daily, it is found in the saliva, secretions of the middle ear and nose, cerebrospinal fluid, bile; in short, in practically all secretions and excretions of the body, and hence its use as an antiseptic is indicated in Rhinitis, Otitis Media, Sinusitis, Bronchitis, Influenza and many other conditions which will at once occur to the clinician.

Supplied as

Cystogen Crystalline Powder.
Cystogen—5 grain Tablets.
Cystogen-Lithia (Effervescent Tablets).
Cystogen-Aperient (Granular Effervescent Salt with Sodium Phosphate).

Samples and literature on request

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useful ideas, which the author has gained in his practical work.

The printing is not in keeping with the excellence of the text.

The Strange Case of Dr. Bruno. By F. E. Daniel, M. D. Cloth. 235 pages. Price $1.50. Austin, Texas: Von Boeckmann-Jones Company, 1913.

The gifted editor of the *Texas Medical Journal* has woven an interesting tale about a young physician, a blending of romance, love, scientific fact, philosophy and imagination, in which suspended amnimation by means of a synthetic drug plays an important part. It is a strangely fascinating story, weird in its realities, awakening in the reader every impulse which is governed by his inner consciousness. It is one of those stories which cannot be told. It must be read in its entirety.

Dorland's American Pocket Medical Dictionary. Edited by W. A. Newman Dorland, M. D., editor "American Illustrated Medical Dictionary." English Edition Revised and Enlarged. 32 mo. of 677 pages. Flexible leather, gold edges. Price $1 net; thumb index, $1.25 net. Philadelphia and London: W. B. Saunders Company, 1913.

This is a most convenient book to have at one's elbow, containing, as it does, most of the "working words" of medical English. Dorland's work as a lexicographer has not been surpassed in this country.

Cancer: Its Cause and Treatment without Operation. By Robert Bell, M. D., Physician in charge of Cancer Research, Battersea Hospital. Cloth, 324 pages. Price, $1.75. London: G. Bell & Sons, Ltd., 1913.

The time was when a man who advocated the cure of cancer without operation would have been laughed out of court. Today our opinions in that direction are undergoing modification. We are beginning to believe that methods other than the knife may prove potent. With this we are in accord with Bell, who sees in cancer the result of thyroid inefficiency. By employing thyroid extract he has been quite successful in the treatment of cancer. Hygienic and dietetic measures are of course strictly followed. Bell does not believe cancer to be caused by a specific organism, but says he often arrests the disease in its early stages by the injection of formic acid. He protests energetically against operation, believing that therapeutic measures are far more efficacious. Bell's theories have been before the profession since 1896 and while they are not in accord with our orthodox doctine, we hope his book will awaken so much interest in his theory that it will be given a careful, conscientious clinical test in this country.

Operative Surgery. By John J. McGrath, M. D., Professor of Operative Surgery in New York Post Graduate Medical School. 4th edition. Cloth, 838 pages, with 364 illustrations. Price, $6.00 net. Philadelphia: F. A. Davis Company, 1913.

Surgical times have changed since the last edition of this book appeared, four years ago, and in consequence much of it has been rewritten and the rest has been carefully revised. Particular attention is directed toward minor surgery which has been incorporated in this edition.

Like its predecessors, the book is replete in the clear presentation of operative procedure, based on the author's extended experience in various New York hospitals, and it easily takes its place as a good reference or working text book.

Minor and Operative Surgery, including Bandaging. By Henry R. Wharton, M. D., Surgeon to the Presbyterian Hospital, Children's Hospital, Consulting Surgeon to St. Christopher's Hospital, etc. Eighth edition; 700 pages; 570 illustrations. Philadelphia and New York: Lea & Febiger, 1913.

The previous words of commendation on earlier editions of this book apply with equal truth to the eighth edition which has been made to conform with present day surgical standards.

The subject has been treated conservatively, although we think the line of demarcation between minor and major surgery has been too loosely drawn.

For example, we cannot call urological surgery, especially that relating to kidney and ureter, minor.

As a whole, however, the book will continue to serve a most useful purpose in making clear general surgical procedure.

Manual of Otology. By Gorham Bacon, A. B., M. D., Professor in Columbia University, New York. Cloth, 536 pages. Illustrated. New York and Philadelphia: Lea & Febiger, 1913.

No book of its size in the field presents such a wealth of otological knowledge in so concise and perfect a manner.

This sixth edition has been brought strictly up to date in the latest ideas on suppurative labyrinthitis, submucous resection, tonsillectomy, vaccine therapy and the various operations on the ear.

We are especially impressed with the text and illustrations in the section on anatomy and physiology, always difficult to the student.

This manual is replete with the kind of information which can be appreciated and assimilated by the general practitioner.

Progressive Medicine. Vol. XV., No. 4. A quarterly digest of advances, discoveries and improvements in the medical and surgical sciences. Edited by Hobart A. Hare, M. D. Paper, 441 pages. $6 per annum. Philadelphia: Lea & Febiger, 1913.

This unusually helpful quarterly presents one of its best numbers in the last number.

The contributors are: E. H. Goodman, J. R. Bradford, Charles W. Bonnly, J. C. Bloodgood and H. R. M. Landis.

The subjects are: Diseases of the Digestive Tract and Allied Organs, Diseases of the Kidneys; The Liver, Pancreas and Peritoneum; Genito-Urinary Diseases; Surgery of the Extremities; Shock, Anesthesia, Infections, Fractures and Dislocations, and Tumors; Practical Therapeutic Referendum.

Each subject is thoroughly covered. The only criticism to be offered is that some writers have gone into their themes almost too exhaustively. Bloodgood and Landis have prepared particularly good reviews. Vol. XV. is in many respects the best of the series.

International Clinics. A quarterly of illustrated clinical lectures on all topics of interest to students and practitioners. Edited by Henry W. Cattell, A. M., M. D. Vol IV., 23rd Series. Price per volume, $2. Philadelphia, J. B Lippincott Company, 1913.

This book is a worthy successor to those which have appeared before. The editor has collected a series of instructive articles on a variety of subjects, each of which hold the interest of the reader.

THERAPEUTIC MEMORANDA.

The Treatment of Arthritis.

Melubrin. Melubrin is a white, odorless, almost tasteless, crystalline powder, readily soluble in water, but only slightly so in alcohol. In ordinary or even in large doses the drug is said to be non-toxic. In moderate doses, it is said to have almost no effect on the circulation or respiration. It acts as a powerful antipyretic, and is also analgesic.

Melubrin has been recommended for painful affections, such as neuralgias. It is also said to have effects similar to the salicylates in rheumatism.

The drug is administered in doses of from 15 to 30 grains, although much larger doses are advised in rheumatism. As much as 150 grains may be given daily.

Schrenk (*Deutsch. med. Woch.*, 1912, No. 34) reports on the use of Melubrin in 31 cases of arthritis, including 24 typical cases of polyarthritis rheumatica. The action of Melubrin is, in general, the same as one is accustomed to see with salicylic acid. For the most part, the pains subside rapidly, the temperature is lowered, and the swelling and redness of the joints subside in the course of a few days. As a whole, the effects produced by Melubrin were less marked than those obtained with the salicylates.

There is no doubt, however, that Melubrin is capable of curing acute rheumatism, without having to resort to the use of the salicylates. Schrenk holds this to be a distinct step in advance, as there is great need of a substitute for the salicylates in those instances in which the latter are badly borne.

The antipyretic action of the drug was also tested, principally in tuberculous subjects. He gave the Melubrin to tuberculous patients for the purpose of reducing the temperature. The initial dose was 7½ grains. If there was no reduction from this dose it was increased, after a few days, to 15 grains, three times daily. Not infrequently, a cumulative action resulted. If, therefore, the temperature reduction from the drug on the first day is not marked, it will, with the same dose, be much more pronounced on the second day.

Schrenk has administered in the neighborhood of 2,500 grams of Melubrin among about sixty patients. In no case has he observed any untoward effect.—(*Progressive Medicine*, December 1, 1913.)

Gonorrheal Ophthalmia.

℞ Albargin, 1%.
Aqua destellata ad ℥ij. (60.0)
Mitte in vitro niger.
S. Instill into conjunctival sac for ten minutes with soft camel hair brush. (*Therapeut. Monat.*)

Fever in Children.

℞ Pyramidonis, gr. L. (3.23)
Succus limonis, ℥j. 30.0)
Aquae destill, ad. ℥vi. (192.0)
M. Sig. One teaspoonful three times a day.
(*Deutsch Med. Woch.*)

An attempt to abort gonorrhea should only be made at the very outset of the process, and by a man fully appreciative of the possible dangers. The best means is a solution of albargin.

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NEOSALVARSAN

The Absolutism of Salicylic Acid and Its Salts in the Treatment of the Various Forms of Rheumatism is Threatened by the Introduction of

MELUBRIN

Melubrin—Sodium Phenyldimethylpyrazolonamidomethanesulphonate—

Exhibits an Action Identical to Salicylic Acid Without Any Disturbance of the Digestive or Circulatory Systems.

Dosage: 15 grains from 3 to 6 times a day. **In Tablet and Powder form.**

Hospitals and Physicians mentioning the *Medical Times* will be supplied with Trial Quantities.

A New Method of Employing Neosalvarsan.

An operation was recently performed in Philadelphia for bringing neosalvarsan directly in contact with the brain tissues in a case of paresis.

The patient was a man 56 years old, with a specific history of some thirty years standing. About two months ago he had a positive Wassermann, which became negative with the development of his mental condition. He failed to respond to any treatment by the mouth, hypodermically, inunction or intravenous, so it was decided to open the skull and see what effect that means might have. The skull was opened over the fissure of Rolando on both sides, and there was injected subdurally "neosalvarsan serum." For four days before the operation three rabbits had been given varying doses of neosalvarsan. On the morning of the operation, the rabbits were bled and five c.c. of the blood serum was injected over each half of the dura. Unfortunately, the patient died before the operating surgeon had an opportunity to witness the results of the novel method of using neosalvarsan.

Artificial Drum Heads as an Aid to Hearing.

Guttich reports a series of forty-nine cases which lacked a drum head, as well as dermatized surfaces in the middle ear, most of which were cured by his operation. Drum heads of cotton, soaked in parrafin, were placed in position and permitted to remain for one-quarter to one-half hour, the time being gradually increased, until in several cases they remained *in situ* for a number of days.

In fourteen of the cases the hearing was markedly improved and this was especially noticeable in hearing conversation.—(*Passow's Beit.*, No. 3, 1913.)

Hexamethylenamin.

The fact that hexamethylenamin acts in some cases as an efficient urinary antiseptic ,and the further fact that it passes into all the tissues and body fluids, led to the hasty generalization that it would act as efficiently against infections in other organs as it did in the bladder. But the activity of hexamethylenamin depends upon its decomposition into formaldehyd and ammonia, which takes place only in an acid medium. The tissues are alkaline in reaction, hence the desired result does not follow. A true acid reaction occurs only in the urine and the gastric juice. The blood, cerebrospinal fluid, mucus, exudates, etc., are not acid. Therefore, no formaldehyd is liberated in these fluids. The question arises, is hexamethylenamin possessed of any antiseptic properties? Hanzlik and Collins have shown that it has none. It is highly improbable that the body-fluids become acid in disease. Hence it may be affirmed that under ordinary conditions the only part of the body in which hexamethylenamin may be expected to exert an antiseptic action is the urinary tract. Extensions of the use of this drug to other organs must be abandoned as useless. Even as a urinary antiseptic, hexamethylenamin is useless unless the urine is acid. If it is not already acid, sodium acid phosphate should be administered to render it so. Substances which tend to render urine alkaline are physiologically incompatible with hexamethylenamin, and, if administered in sufficient quantity to overcome the acidity of the urine, will entirely destroy the effect of the latter drug. Sodium or potassium citrate or acetate may be used in this way to stop the action of the drug if urinary irritation appears.—(*J. A. M. A.*, Jan. 3, 1913.)

The best preventives and the best remedies for

PULMONARY TUBERCULOSIS

are

CLEANLINESS SUNLIGHT GOOD FOOD

But the food must be digested and assimilated: to stimulate the centres of assimilation and nutrition there is no better remedy at the physician's service than

Wampole's Preparation of Cod Liver Extract

The Best of Reconstructive Tonics

It builds up the run-down patient, allays the cough and assists Nature in overcoming the invading bacilli.

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The Battle Creek Sanitarium is an institution for the treatment of chronic invalids. Incorporated 1876; reincorporated 1898; erected and equipped at a cost of $2,000,000; non-profit paying; exempt from taxation under the laws of Michigan; employs 300 nurses and trained attendants and 600 other employees.

The institution has a faculty of 30 physicians, all of good and regular standing, and has treated over 89,000 patients, among whom are nearly 2,000 physicians and more than 5,000 members of physicians' families. Any physician who desires to visit the Sanitarium will receive, on application, a visiting guest's ticket good for three days' board and lodging in the institution. No charge is made for treatment or professional services to physicians.

Send for a copy of a profusely illustrated book of 229 pages, entitled, "The Battle Creek Sanitarium System," prepared especially for members of the medical profession.

THE BATTLE CREEK SANITARIUM, BATTLE CREEK, MICHIGAN

Serodiagnosis of Pregnancy.

Various German writers commend Abderhalden's new test. After examining 100 cases, Ebeler and Löhnberg (*Berl. klin. Woch.*, Oct. 13, 1913) note that the positive ninhydrin reaction is invariably obtained during pregnancy, but that it may also ensue in non-gravid women. While, therefore, the method is not an absolute specific one, it is an important diagnostic aid.

Porchownik (*Zent. f. Gyn.*, 1913, No. 33) believes that the dialyzation method, provided the technic be faultless, is reliable. He sees value in it for the diagnosis of extra-uterine pregnancy, and in febrile patients.

Dr. Blank,
Physician and Surgeon,
————, Ala.

January 6, 1914.

DR. H. N. CHAMBERLIN,
Chicago, Illinois.

DEAR DOCTOR:—

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Will let you hear from me from time to time. I am,

Gratefully yours,
(Signed) ————————, M.D.

NOTE: Dr. Blank became infected while treating a syphilitic patient; "MER XX" was recommended to him by another physician and he went to Chicago for treatment by Dr. Chamberlin some forty days ago. He was instructed in the use of "MER XX" and the above is a copy of letter received in answer to inquiry from Dr. Chamberlin as to how he was getting along and as to the results he obtained from the use of the remedy. The reply speaks for itself. The name of the physician will be supplied upon application.

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Lactic Acid Bacillus Spray.

H. B. Wood, Rocnester, Minn., says that four cases of diphtheria in the Rochester State Hospital for the insane occurred in January and February, 1913, which were promptly traced to a carrier—a kitchen attendant—after whose isolation no more cases occurred. After seven weeks treatment by various methods, of the healthy carrier, with still persistent positive cultures, nose and throat spraying with *Bacillus acidi lactis* was employed on the suggestion of Dr. A. H. Sanford, Bacteriologist of St. Mary's Hospital, and in a week the cultures were negative and remained so. The method was next employed in four cases in May, 1913, and cultures became negative and the membrane disappeared in still shorter periods of time—three days. Wood offers these results to the profession rather guardedly and says it will be well for others to report their experience with the method, not only in the disinfection of carriers, but also in the treatment of the disease. Perhaps the country physician away from the laboratory facilities may find some advantage in swabbing or douching the nose and throat with sour milk.—(*J. A. M. A.*, Aug. 9.)

Chronic Glandular Enlargement.

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MONDAYS:

City Hospital—		
Surgery	Dr. Dawbarn	2:00 P.M.
Dermatology and Syphilis	Dr. Fordyce	2:30 P.M.
Cumberland Street Hospital—		
Surgery	Dr. Ritch	2:30 P.M.
Laryngology and Rhinology	Dr. Stewart	4:00 P.M.

TUESDAYS:

City Hospital—		
Ophthalmology	Dr. Gilfillan	2:00 P.M.
Gynecology	Dr. Stearns	2:30 P.M.
Surgery	Dr. N. W. Green	2:00 P.M.
Neurological Hospital—		
Neurology	Dr. Byrne	9:00 A.M.
Cumberland Street Hospital—		
Ophthalmology and Otology	Dr. Warner	3:00 P.M.
Kings County Hospital—		
Genitourinary Surgery	Dr. Morton	2:00 P.M.
Coney Island Hospital—		
Surgery	Drs. Fiske and Bogart	10:30 A.M.
Surgery	Drs. Murphy and Lack	10:30 A.M.
Medicine	Drs. Hall and Nash	3:30 P.M.
Medicine	Drs. Hegeman and Byington	3:30 P.M.

WEDNESDAYS:

City Hospital—		
Medicine	Dr. Quimby	1:30 P.M.
Genitourinary Surgery	Dr. Greene	2:00 P.M.
Surgery	Dr. Dawbarn	2:00 P.M.
Obstetrics	Dr. Dorman	2:30 P.M.
Neurological Hospital—		
Neurology	Dr. Maloney	10:00 A.M.
Cumberland Street Hospital—		
Gynecology	Dr. Pierson	2:30 P.M.
Surgery	Dr. Pallister	2:30 P.M.
Kings County Hospital—		
Orthopedics	Dr. Truslow	10:00 A.M.
Dermatology	Dr. Winfield	1:00 P.M.
Gastroenterology	Dr. Lincoln	2:00 P.M.
Orthopedics	Dr. Napier	4:00 P.M.
Coney Island Hospital—		
Pediatrics	Drs. Beck and McQuillan	3:30 P.M.
Pediatrics	Drs. Pendleton and Van Wart.	3:30 P.M.

THURSDAYS:

City Hospital—		
Surgery	Dr. N. W. Green	2:00 P.M.
Neurology	Dr. Jelliffe	3:00 P.M.
Metropolitan Hospital—		
5th; 26th—Electro-Therapeutics	Dr. Royle	2:30 P.M.
5th; 19th; 26th—Genito-urinary Surgery	Dr. Carleton	2:30 P.M.
19th—Laryngology	Dr. Foster	2:30 P.M.
5th—Medicine	Dr. Mills	2:30 P.M.
5th; 26th—Medicine	Drs. Rankin and Swift	2:30 P.M.
26th—Medicine	Dr. Hathaway	2:30 P.M.
19th—Neurology	Dr. Howard	2:30 P.M.
19th—Obstetrics	Dr. Thomas	2:30 P.M.
5th; 26th—Ophthalmology and Otology	Dr. Boyle	2:30 P.M.
5th; 19th; 26th—Surgery	Drs. Bagg and Harrington	2:30 P.M.
Cumberland Street Hospital—		
Surgery	Dr. Ritch	2:30 P.M.
Laryngology and Rhinology	Dr. Stewart	4:00 P.M.
Kings County Hospital—		
Obstetrics	Dr. Judd	10:00 A.M.
Otology	Dr. Alderton	1:00 P.M.
Gynecology	Dr. McNaughton.	1:30 P.M.
Coney Island Hospital—		
Gynecology	Drs. MacEvitt and Mills.	1:30 P.M.
Gynecology	Drs. Mayne and Rankin	1:30 P.M.
Rhinology and Laryngology	Dr. Tucker	1:30 P.M.
Surgery	Drs. Fiske and Bogart	3:00 P.M.
Surgery	Drs. Murphy and Lack	3:00 P.M.

(*Continued on p. 30.*)

Physicians' Patients

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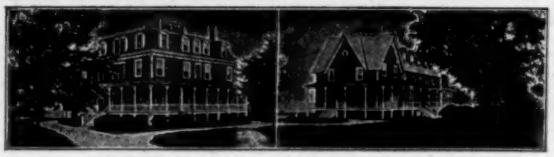

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(*Continued from p. 28.*)

FRIDAYS:

City Hospital—		
Surgery	Dr. Dawbarn	2:00 P.M.
Laryngology and Otology	Dr. Dougherty	2:00 P.M.
Neurological Hospital—		
Neurology	Dr. Abrahamson	9:00 A.M.
Cumberland Street Hospital—		
Surgery	Dr. Pallister	2:30 P.M.
Ophthalmology and Otology	Dr. Warner	3:00 P.M.
Surgery, Oral	Dr. Shea	4:30 P.M.

SATURDAYS:

City Hospital—		
Pathology	Dr. Larkin	2:00 P.M.
Neurological Hospital—		
Neurology	Dr. Walsh	2:00 P.M.
Kings County Hospital—		
Pediatrics	Dr. Parrish	3:30 P.M.

Salvarsan is generally indicated in renal syphilis.

Consent to Operation.

W. S. Wermuth, of the Chicago Bar, Chicago, gives a review of the legal status of the question of consent to operation as shown in the leading cases from the court reports. Some of the decisions seem to be unjust from a medical point of view, but they are presumably the law as it stands at the present time. His summary of the whole is given as follows: "The safest practice is to obtain the consent of the patient. If she be a wife, that is probably sufficient. If the patient is a child, at present, the consent of the parent should be obtained. If the patient cannot consent, every effort should be made to gain the consent of some relative. Carefully explain the scope of the proposed operation to the patient or, if that be clearly inadvisable, to the nearest relative. Operate no more than outlined except in dire emergency."—(*J. A. M. A.*, Aug. 9.)

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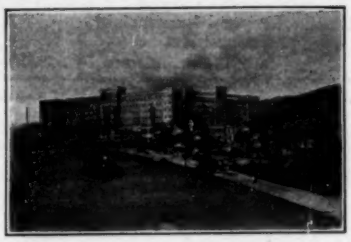

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THOS. TAGGART, Pres.

Local Anesthesia.

The recent developments in the field of local anesthesia in surgery are noticed by J. F. Mitchell, Washington, D. C. Probably the greatest factor in causing the popularity of the method has been the introduction of novocain as a substitute for cocain. It has the advantage of being about seven times less toxic than cocain and its solution stands boiling. It is conveniently supplied in tablet form in combination with synthetic suprarenin and can be dissolved in 0.6 per cent salt solution, to which has been added a little hydrochloric acid. For infiltration purposes 0.25 to 0.5 per cent solutions are used and as much as 125 cc. of the latter strength may be safely injected. It is a little slower in action than cocain and where small amounts only are necessary, Mitchell still uses it, but for all larger infiltrations novocain is the choice. Urea and quinin hydrochlorid is another useful local anesthetic. It has in its favor its practically negative toxicity, its control of postoperative bleeding and the duration of its anesthesia for hours or days, thus eliminating postoperative pain. It is suited, therefore, for rectal work and is said to be specially useful in tonsillectomy. The usual strength of solution is from 0.5 to 1 per cent. Anesthesia is obtained slowly and operation should be delayed at least fifteen or twenty minutes.

The most of Mitchell's paper is taken up with the uses of novocain. Bier's venous infiltration method is described as a useful addition to operations in nonseptic conditions of the limbs, but the discomfort of the tourniquet has to be considered. Mitchell sees no advantage in Goyanes' intra-arterial method over the venous infiltration, and an obvious disadvantage in the greater difficulty of finding the artery. The anesthetization of a distant portion of an arm or leg can be well accomplished by the block method, and he notices numerous publications of its successful use, especially those of Braun and Hartel, Bier, Kocher and others. The work of Crile has been of great value.

The advantages of local anesthesia are nowhere better shown than in the surgery of the aged. The combined method with nitrous oxid has been found to be very useful in fracture cases, and in hernia he does not consider old age a contra-indication. Hernias of all varieties, except in very young children, are, he thinks, best done under local anesthesia and he mentions two cases, one in a man of 98 and another in a woman of 84, in which it was strikingly successful. He says that in his paper he has by no means exhausted or done justice to the material afforded by the literature of the last few years, but has tried to give some idea of the general progress, to point out some of the possibilities and show the degree of perfection that may be attained. The technic cannot be mastered without practice. The details should be learned by daily experience, where absolute success is not so imperative.—(*J. A. M. A.*, Sept., 1913.)

Eczema is an acute or chronic inflammatory process, revealed by hyperemia, infiltration or exudation, affecting the papillary layer of the derma, showing redness, swelling, papules, vesicles, or a red surface deprived of the epidermis, oozing serum with formation of crusts or scales, accompanied with itching and burning sensation.

"Clinically the spine is a flexible bony tube which lodges the spinal cord."—Campbell and Kerr.

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Sensitized Bacterial Vaccines.

Besredka, of the Pasteur Institute, claims that sensitized bacterial vaccines or "serobacterins" possess a great advantage over the bacterial vaccines now in common use, in that their action is far more rapid, and they produce no clinical or opsonic negative phase, and no local or general reactions. (*Mulford Digest,* Dec., 1913.) His researches have been confirmed by such prominent investigators as Marie, Remlinger, Dopter, Theobald Smith, Metchnikoff, Gordon and others, all of whom found that sensitization of bacteria confers upon them new properties which render them highly effective as vaccines, free from the defects of the ordinary bacterial vaccine and "possessing an action which is *certain, inoffensive, rapid* and *lasting.*"

Clinical experience has proven beyond question that these killed bacteria produce a degree of immunity which enables the person treated to resist infection and which is of great value therapeutically. The length of time required before the immune condition is present and the local and general reactions which sometimes follow the first and occasionally subsequent doses are, however, factors calling for improvement.

To remedy the first of these defects, experiments were made with mixtures of serum and killed bacteria, with the idea that by this means immediate passive immunity could be had, as well as a more permanent active immunity, but this procedure resulted in failure, as only a slight degree of passive immunity was secured and no active immunity whatever. Besredka attributed this failure to the excess of serum present in such mixtures, and for the preparation of his "sensitized vaccine" took advantage of the discovery of Ehrlich and Morgenroth that bacteria mixed with a serum containing specific antibodies unite permanently with such antibodies. After maceration in the immune serum for a sufficient time the senitized bacteria are recovered by centrifugalization. The bacteria, with their antibodies attached, are then washed in the centrifuge with physiological saline solution until all traces of serum are removed. Careful complement fixation and animal tests are employed to make sure that proper sensitization has taken place, and finally the bacteria are made up into standardized suspensions for administration. Since the value of serobacterins depends on thorough sensitzation, and the complement fixation test proves the extent to which this has taken place, this test constitutes a vital part of the technic.

A large number of favorable reports have appeared on the value of serobacterins in the preventive and curative treatment of such diseases as cholera, plague, typhoid fever, dysentery, streptococci and pneumococcic infections, gonorrhea and even tuberculosis and rabies. Sensitzed tuberculin is coming into very general use in Germany and other European countries, and sensitized rabies vaccine, on account of the rapidity and greater certainty of its action, has been adopted as the official Pasteur treatment.

The underlying principle explaining the action of serobacterins, according to Besredka, is that the bacteria prepared by sensitization are rapidly devoured by the phagocytes, and this is the cause of the absence of unfavorable reactions following their use. The combining of antibodies and bacteria outside the body disposes of a long-drawn-out preliminary process which, with the bacterial vaccines, must be done by the patient's body cells. In serobacterins, this combination of antibodies with the bacteria being already performed, their action is immediate and free from local and general reactions.

The action of serobacterins is characterized as follows:

1. *Certain*—because the bacteria are already prepared for phagocytosis and intra-cellular digestion.
2. *Rapid*—an effective immunifying response follows the first injection in from 24 to 48 hours.
3. *Harmless*—Being saturated with antibodies, the sero-bacterins do not absorb any of those present in the blood of the patient, and consequently cause no opsonic or clinical negative phase. They are free from toxic action.
4. *Permanent*—Animal experiments prove the immunity secured from the use of serobacterins or sensitized bacterial vaccines is more permanent than that following the use of bacterial vaccines.

The rapid production of active immunity marking the action of serobacterins is invaluable in both the treatment of disease and preventive immunization. In treatment of a patient infected with rapidly multiplying pathogenic bacteria, the prompt immunizing response should overcome the infection before it causes serious damage. In preventive immunization, especially in epidemics, the advantage of securing immediate immunity should make the use of serobacterins almost obligatory.

Dr. F. E. Stewart, of Philadelphia, writes interestingly on sensitized vaccines (*Jour. Am. Phar. Assn.,* Jan., 1914).

They were introduced in 1902 by Besredka, and have gradually been developed by Besredka, and Garbat and Meyer, Gordon, Broughton-Alcock, Boinet, Cruveilhier, Bertrand and Feigan, and other investigators. One of the sensitized vaccines, for immunizing against bubonic plague, is prepared from killed sensitized plague bacilli, and is now official in the French Codex.

What is sensitization? Normal blood serum, owing to the alexin or complement it contains, and the small amount of natural amboceptor present in the blood, possesses in some degree the power of digesting bacteria and other protein substances. This power is enormously increased during the process of parenteral digestion. This is due to the stimulating effect upon the tissue cells of the protein introduced. For, if a protein is introduced into the tissues, the tissue cells are stimulated to produce a specific amboceptor, the function of which is to sensitize the protein and thus prepare it for digestion. This digestion is accomplished by the joint action of amboceptor and complement. (Vaughan says

(*Continued on p.* 34.)

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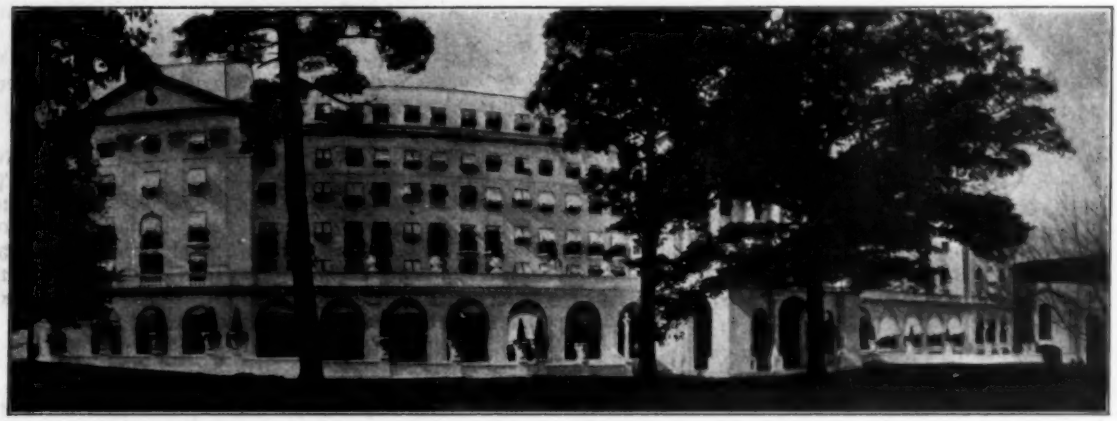

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Medical Director

that all digestive enzymes are composed of amboceptor and complement.)

But the complement cannot act upon the protein until the later is first sensitized by the amboceptor. Amboceptors are *specific,* and kind of amboceptor produced by the tissue cells depends upon the kind of *antigen* (protein) used to produce it. The digestion is called *lysis.* Hence we have bacteriolysis produced by the joint action of specific bacteriolytic amboceptor and complement upon the kind of bacteria injected into the tissues.

When unsensitized killed bacteria (bacterin) are injected into the tissues, all of this complicated process of parenteral digestion must be carried on by the body cells to produce the specific amboceptor and other antibodies to which the value of the bacteria as an immunizer is due. In preparing sensitized vaccine, the bacteria are artifically sensitized by the amboceptor in the specific (homologous) serum before injection, and thus prepared for the immediate action of the complement already present in the blood of the individual injected.

This is Garbat and Meyer's explanation of how sensitized vaccines act: In explaining the action of sensitized vaccines, Besredka refers to the researches of Garbat and Meyer. These investigators claim that bacteria are typical cells consisting of an external protoplasmic envelope and an internal nuclear portion. When they are disrupted by the action of amboceptor and complement, the outer portion is digested and the inner set free. Both portions are toxic and give rise to individual immunizing substances by stimulating the tissue cells to produce them.

The question of the size of dosage is asked.

Gordon reported excellent results from the use of killed sensitized strepto-bacterin in a series of cases treated at St. Bartholomew's Hospital. He employed the "intensive" method, which consists of giving rapidly increasing doses at brief intervals. The dosage in the four following cases illustrate his method:

In Case 1—(A girl suffering from erysipelas) he administered 100 million sensitized streptococcus vaccine as the initial dose, 24 hours later 500 million, and on the following morning 1,000 million. Three days later the child was quite well.

In Case 2—(A nurse with cellulitis of the scalp and cervical adenitis), the patient was given an initial dose of 100 million, the following day 500 million, and 24 hours later 1,000 million. Two days later the erysipelas subsided, the temperature fell, and convalescence ensued.

In Case 3—(A patient suffering with an acute attack of erysipelas of the forehead and cheeks), three successive doses of 100, 500 and 1,000 million sensitized streptococcic vaccine were given at 24-hour intervals, followed by a prompt cure.

In Case 4—(A patient who suffered from a compound fracture of the lower end of the left humerus which had suppurated, and cultures from which showed streptococcus pyogenes), a single dose of 100 million (this may be a typographical error; possibly 1,000 million is meant) sensitized streptococcus vaccine was given. The local condition improved and the pyrexia subsided.

The dosage employed by Boinet in treating typhoid fever illustrates another system of dosage. He says: "The best results follow the use of doses of 2 c.c., repeated daily during four consecutive days, if the disease is grave, but three consecutive days if the disease is mild." He used the living sensitized germs.

Broughton-Alcock reports cases of gonorrhea, acne, sycosis; furunculosis, impetigo, and seborrheic eczema, treated with appropriate sensitized living bacteria. In cases of acute and chronic gonorrhea without complications, the serobacterin was apparently without benefit. In cases of orchitis, epididymitis, and in gonorrheal arthritis and periarthritis, good results were invariably secured. In every case following the second injection, and in many cases following the first injection, the pain ceased and the swelling was notably diminished. The arthritis and periarthritis were arrested. To avoid relapse, the injections were repeated. It is important to know the size of doses and intervals to give these reports proper educational value.

The most striking characteristics of sensitized vaccines are:

1. They produce but slight local reaction (inflammation at site of injection),
2. They cause no general reaction (malaise, increased temperature, etc.),
3. They may be given in much larger doses and much more frequently than the unsensitized bacterins (every 24 hours),
4. The immunizing effect is almost immediate (manifesting itself within from 24 to 48 hours),
5. They sometimes give successful results in very late stages of a disease, when no response is secured from the ordinary bacterin, and even serum treatment is ineffective."

According to Besredka, "whatever be the nature of the virus, whether it be a question of bacteria, of pest, of dysentery, of cholera, or of typhoid fever, whether it be a question of rabies virus, or diphtheria toxin, whether the bacteria are *killed* or *living,* sensitization confers upon them new properties which make of them vaccines of the first order, and which are summed up in an action *sure,* rapid, harmless and durable."

Ectopic Pregnancy.

J. F. Baldwin, Columbus, O., publishes accounts of two rather notable instances of ectopic pregnancy. In the first case, the patient applied for relief from an almost complete procidentia which had become very troublesome. He advised the usual repair from below and probably hysterectomy with implantation of ligaments into the stump. The operation was performed and both tubes were found disturbed and the right one leaking They were removed and the operation was completed. On examination two fetuses were found in the left tube and one in the right, all of the same age. The patient was much surprised. In the second case a woman, aged 47, one tube had been removed with the corresponding ovary seven years before. The symptoms were apparently those of the menopause, she had been "dodging" menstruation for over six months and had a good deal of pain in the lower abdomen, but there was no history of sudden pain or sudden collapse. A fetus two inches long was found on the remaining tube. Both patients made an uneventful recovery.—(*J. A. M. A.*, Aug. 9.)

Use of Heroin Spreading Among Drug Habitues.

According to information gathered by the U. S. Department of Agriculture, there has been a sudden and very significant increase in the use of heroin by drug habitues. The sales of this drug have recently increased greatly, particularly in those States which have rigid laws preventing the indiscriminate sale of morphin and cocain. Investigation of the subject establishes the fact that many drug victims who formerly used morphin and cocain have begun using heroin, the sale of which is not as yet as carefully restricted under State laws. The drug is at least as dangerous as morphin. The Department, pending further action, is warning all people who are unfamiliar with the drug to avoid all preparations containing the substance and to take it only on the prescription of reputable physicians.

Heroin, diacetyl morphin, is frequently found as a

constituent of a number of patent medicines. Its use seems to be especially notable in parts of Pennsylvania. In 1913 the coroner's office in Philadelphia County held inquests on five sudden deaths from heroin poisoning. In each case the victim was a heroin fiend, was on a debauch and took an overdose. As indicating the wide sale of this substance, it is known that one druggist in Pennsylvania whose store was located in an undesirable section of his city, has been buying heroin tablets in 25,000 lots.

Spirochaeta Pallida in Paresis.

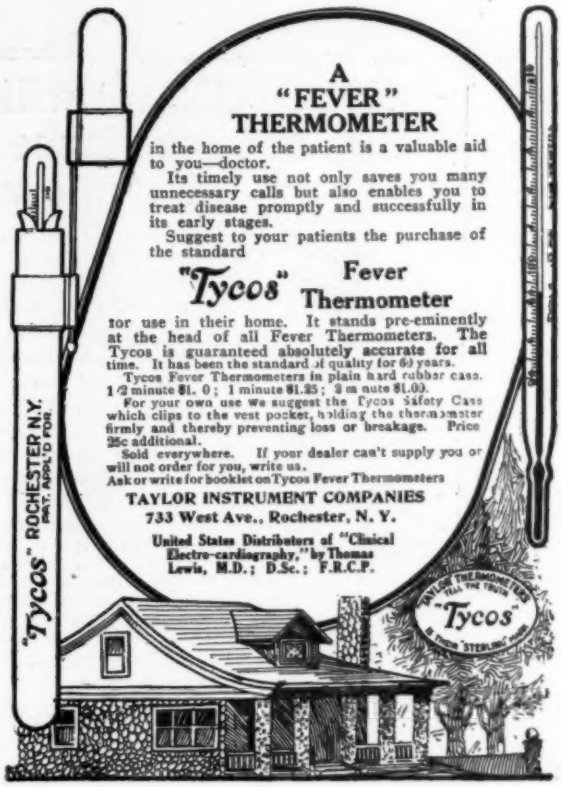
U. J. Wile, Ann Arbor, Mich., describes the results obtained by Forster and Tomasczewski in using the method of brain puncture to demonstrate the presence of the spirochete in the brains of living paretics. He has been permitted to assist in two of the operations, to substantiate the microscopic findings and to report them here. The method was by drilling a hole through the skull under antiseptic conditions, and drawing out by suction with a syringe a small cylinder of brain substances containing both gray and white matter and more or less fluid from the ventricle.

The operation is very simple; one has only to avoid the cerebral and meningeal vessels or any important centers. In twenty cases examined the spirochetes were found in the gray matter in eight. This confirms the discovery of Noguchi, which has effectually disposed of parasyphilis so far as the central nervous system is concerned. The opinion has been expressed that the organism is not present in every case of paresis, but these later findings, considering the large proportion of cases and the very small quantity of brain substance examined, make it more rational to believe that it is present in all cases. It is not too much to hope, Wile says, that the demonstration of the spirochete in cases where the cortical centers are not much involved may have valuable therapeutic bearings. It has hitherto been assumed also that paretics could not transmit syphilis. The discovery, however, of the organism in the living brain of such patients throws more than a shadow of doubt on such a view.—(*J. A. M. A.*, Sept. 13.)

Myotonia Atrophica.

A case of myotonia atrophica is reported by Foster Kennedy, who says that its rarity warrants its publication, but four cases having been reported as yet in the medical literature of this country. The patient was an unmarried Swiss, aged 46, and the disease, which is peculiar to middle-aged individuals, slowly progressive and frequently of the familial type, is so characteristic a symptom-complex as to be easily recognizable. Thomsen's disease is comparatively frequent, but the combination of increased tonus in some muscles and a primary flaccid palsy in others, as in this case, is rare. The case is described in detail. The author concludes that "the combination of premature bilateral cataract with atrophy of the temporal, orbicular, masseter, sternomastoid, vasti and anterior tibial muscles, together with a sharply contrasted myotonus in the hands, occurs too frequently to be ignored and most probably points to a deficient hereditary endowment as the approximate cause of the disease."—(*J. A. M. A.*, Nov. 29.)

If one wishes to start a luetic patient on intramuscular injections, it is well to give the first injection in the form of a soluble salt which is quickly absorbed and eliminated, a point of importance should an idiosyncrasy to mercury exist.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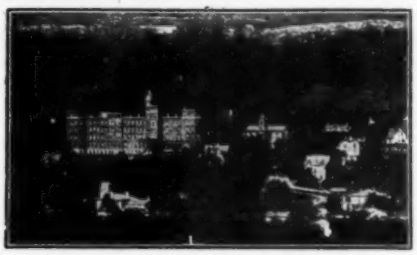

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White-Spot Disease.

A case of white-spot disease is reported and discussed by H. H. Hazen, Washington, D. C. It started as a morphea-like condition and the lesions changed so as to sunulate lichen planus atrophicus. Microscopically there was a rarefaction instead of a sclerosis. His review of the case leads him to the following conclusion: "1. It is generally conceded that there are two groups of cases that may give rise to 'white-spots,' the morphea guttata group and the lichen planus atrophicus group. 2. Typical cases of either one of these groups differ both clincally and histologically from typical cases of the other group. The large majority of reported cases fall clearly into one or the other class, and there is no instance on record in which the lesions of one type have been converted into lesions of the other type. 3. Clinically the character of the eruption in my case changed from that of a morphea guttata type to that of a ichen planus atrophicus variety, and in this respect is unique. 4. Histologically my case showed a subpapillary disappearance of both collagen and elastin, a condition approached only by the case reported by Johnston and Sherwell. 5. Judging by some of the cases reported it is impossible to draw a hard and fast line between the two types of disease. Riecke's case does not clearly belong to either type, nor does mine, for it presents features suggesting a transitional stage between the two groups."—(*J. A. M. A.*, Aug. 9.)

Nephritis.

J. F. Percy, Galesburg, Ill., gives his further experience in the use of thyroid in the treatment of nephritis. In his former paper he describes the treatment from the point of view of the internist, and in the present one he calls attention to its probable value as a preparatory treatment for surgical operations in nephritic patients. He thinks it will be found to have considerable value in this way and reports two cases in which it was used successfully in nephritic patients suffering from hernia. In both cases the kidney disorder was cured. He also reports another case which he thinks suggests additional possibilities of value in thyroid, that is for the relief of non-obstructive postoperative suppression of urine. The patient had been operated on for stone in the ureter, suppression of urine occurred, and was resistant to the usual method of treatment. As regards the method of administration, small doses (two grains) are ineffective. His own rule is to give six two grain tablets a day for the first week and after that to increase it to ten a day. After the urine becomes normal he reduces the amount to four to six a day and gives these three weeks out of each month. Whether this is absolutely necessary he is not quite prepared to say. Most of his early patients have not continued the treatment and have remained well. If the high-blood pressure persists, he follows the thyroid treatment with the persistent use of potassium iodid and nitro-glycerin as mentioned in his previous article and has seen it of benefit. He believes the use of dried thyroid gland is of value in the treatment of nephritic patients, surgical as well as medical. —(*J. A. M. A.*, Aug. 9.)

In employing vaccine in gonorrhea of females, Fromme found it most successful in those cases of pyosalpinx in which the acute febrile stage has subsided and prior to the beginning of a chronic condition.

Frequent nocturnal micturition in the young is indicative of renal tuberculosis.

The Streptococcus in Chorea.

G. F. Dick and T. Rothstein, Chicago, describe a streptococcus isolated from the throat of a patient with chorea of five years' duration. Similar organisms have been isolated from more acute cases. It forms a heavy dirty white growth on blood-agar with a raised border and a wide zone of hemolysis. It grows aerobically and otherwise equally well on all ordinary mediums. It ferments milk with slight acid production, but without clotting it. It does not ferment dextrose, lactose, mannite, inulin, or saccharose. On agar slants it is a Bram-positive organism occurring in irregular groups and short chains with an abundance of smaller Gram-negative forms, suggesting a mixed culture. In milk it grows in extremely long chains and staining shows no capsule. Intravenous injection of a dog from four agar slants developed choreic movements within twelve hours.—(*J. A. M. A.*, Oct. 11.)

Tuberculosis of the Joints.

H. W. Orr, Lincoln, Neb., pleads for the non-surgical treatment of joint tuberculosis. He has compared the patients operated on and those not operated on in a series of fifty cases altogether, as to duration of active disease process and the resulting deformity. The results of his study show a wide margin in favor of the patients not operated on in both these respects. The operated patients showed a period of active disease much more than twice as great as those not operated on, and while it is harder to estimate the results in the latter as regards resulting deformity, he thinks it approximates the same figure. Operation, moreover, he finds is not time-saving. He charges up the evil effects of surgical interference; first, improper selection of patients; second, work done by inexperienced physicians under unfavorable conditions and, third, failure of experienced and skilled surgeons in after-observation and care. All of our experience with joint and bone tuberculosis teaches us that a large percentage of good results follow conservative treatment, carefully carried out with an early diagnosis. Some of the literature urging radical surgery has done harm in inducing surgeons to undertake operations under unfavorable conditions and improper surroundings.—(*J. A. M. A.*, Oct. 11.)

Chronic Eczema.

An eczema may be called chronic when no signs of exudation or inflammation are manifest. At this stage there is often a good deal of thickening of the epidermis which may prove most resistent to treatment. The single localized patch often seen upon the front of the shin may require a good deal of stimulation before it will respond to treatment. The following ointment may be applied continuously:

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